Honeywell
101 Columbia Rd
Morristown, NJ 07962

March 6, 2015

Mr. David Doyle, Case Manager
New Jersey Department of Environmental Protection
Division of Responsible Party Site Remediation
401 East State Street, Mail Code 401-06
Trenton, NJ 08625-0420

RE: Revised Remedial Investigation Report/Remedial Action Work Plan/Remedial Action Report
Study Area 5 – Site 153 Former Morris Canal
Jersey City, Hudson County, NJ
NJDEP PI# G0000008767

Dear Mr. Doyle:

Honeywell is transmitting for NJDEP review one (1) hard copy and three (3) electronic copies of the enclosed combined Remedial Investigation Report (RIR), Remedial Action Work Plan (RAWP) and Remedial Action Report (RAR) for Site 153 Former Morris Canal (Site).

The enclosed document was submitted to the NJDEP on December 31, 2014, and has now been revised to address comments received from Plaintiffs in a letter dated February 10, 2015 (attached). The revisions consist of added text regarding Honeywell's ongoing obligation to perform additional remediation in the event of sewer repair or replacement in accordance with the Consent Decree Regarding Sites 79 and 153 South (Consent Decree). The text revisions are in the Executive Summary, RAWP and RAR sections (pages ES-3, 48, 57, 59, 62). The enclosed document replaces the December 2014 submittal.

This report addresses remedial investigation and remedial action requirements in accordance with the NJDEP Technical Requirements for Site Remediation and the Consent Judgment dated September 7, 2011. The enclosed document also addresses the completion of remedial investigation and remedial actions for the Morris Canal Site, and presents proposed remedial actions for chromium-impacted soils at several adjacent commercial properties and roadway areas.

Remedial actions at the Morris Canal Site were completed during 2009 to 2011 and included a combination of shallow soil excavation and engineering controls. With the exception of the portion of the Morris Canal adjacent to the New Jersey City University Property, Morris Canal North, the remaining remedial actions at the Site were implemented as Interim Remedial Measures. These actions were documented in previous report submittals to the NJDEP, and are discussed in the RAR section of the enclosed report. This RAR proposes those remedies as the final remedial actions for the Site, and seeks final approval for those actions (subject to Honeywell's obligation to conduct additional remediation in the event of sewer repair or replacement at Site 153, pursuant to the Consent Decree).

The completed remedial actions meet the requirements of the Sewer Protocol as specified in Appendix B of the Consent Judgment. A Deed Notice for the Site was recorded on November 30, 2010. A modified Deed Notice has been prepared which reflects the completed remedial actions, current block and lot, and current NJDEP model deed notice format.

The RAWP section of the enclosed report addresses proposed remedial actions for chromium-impacted soils on several adjacent commercial properties and roadway areas. The proposed remedial actions include a combination of soil excavation and implementation of engineering and institutional controls, similar to remedial actions completed at the Morris Canal Site. Honeywell seeks approval for the implementation of the

proposed remedial actions for the offsite properties detailed in this report, and is continuing its work with the respective property owners to finalize their consent to the said actions.

In summary, Honeywell is submitting the enclosed document for NJDEP review and seeks approval for: (a) the modified Deed Notice for the Site; (b) the proposed remedial actions for the specific properties adjacent to the Morris Canal and discussed in this report; and (c) the previously implemented Interim Remedial Measures at the Morris Canal Site, as the final remedial actions.

If you have any questions, please call me at 973-455-3302.

Sincerely,

Maria Kaouris

Maria Kaouris
Remediation Manager

MK:eg/sgf

Enclosure: RIR/RAWP/RAR for Site 153 Morris Canal
(1 hard copy and 3 electronic copies)

cc: (electronic copy)
Joe Clifford - Amec Foster Wheeler
Ed Gaven - Amec Foster Wheeler
Michael Daneker - Arnold & Porter LLP
Jeremy Karpatkin - Arnold & Porter LLP
Timothy Boyle - Bayonne Municipal Utilities Authority
Dr. Bruce Bell – Carpenter Environmental Associates, Inc.
Kim Hosea – Carpenter Environmental Associates, Inc.
Donna Russo - City of Bayonne
Dr. Benjamin Ross – Disposal Safety, Inc.
John Rolak - Hatch Mott MacDonald
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Of Counsel

February 10, 2015

VIA E-MAIL

Michael Daneker
Jeremy Karpatkin
Arnold & Porter LLP
55512th Street, N.W.
Washington, DC 20004-1206

Re: Sites 79 and 153 South Consent Decree
Remedial Investigation Report/Remedial Action Work Plan/Remedial Action Report for Study Area 5 Site 153 Former Morris Canal

Dear Michael and Jeremy:

Under a cover letter dated January 9, 2015, Honeywell sent plaintiffs its Remedial Investigation Report, Remedial Action Work Plan, and Remedial Action Report for Study Area 5 Site 153 Former Morris Canal (hereafter ñSite 153 RIR/RAWP/RARò), dated December 2014. The submission also included a cover letter to the New Jersey Department of Environmental Protection (NJDEP), dated December 31, 2014, in which Honeywell requests that NJDEP approve the modified Deed Notice for the site; approve the proposed remedial actions for the off-site properties adjacent to the Morris Canal, as set forth in the report; and approve the previously implemented interim remedial measures at the Morris Canal site as the final remedial actions.

In its January 9, 2015, letter to plaintiffs (p. 1), Honeywell acknowledges that it sent the Site 153 RIR/RAWP/RAR to NJDEP in violation of paragraph 84(c)(viii) of the Consent Decree Regarding Sites 79 and 153 South. ñ[W]e had an obligation to provide you with a draft of the RAR portion of this report before transmitting it to the NJDEP.ò Honeywell states that, in order to rectify its oversight of this requirement, it will ñask the NJDEP to hold up their review until we receive your comments.ò We appreciate Honeywellôs acknowledgment of its error and the steps taken to rectify the error.

Plaintiffs set forth their comments below. If the parties are able to reach resolution of these matters, plaintiffs will find the Site 153 RIR/RAWP/RAR to be acceptable.

Requested Response. Plaintiffs request that Honeywell respond within three weeks.

Comments. Honeywell should clarify its ongoing obligation to remediate Site 153. The Site 153 RIR/RAWP/RAR does not set forth clearly: (1) that remediation at Site 153 is incomplete; and (2) that Honeywell has an ongoing obligation to remediate the site under certain circumstances.

In its current form, the Site 153 RIR/RAWP/RAR includes footnote 1 (p. ES-4), which states:

> Paragraph 71 of the Consent Decree Regarding Sites 79 and 153 South (Consent Decree) in *Jersey City Municipal Utilities Authority v. Honeywell, Jersey City Incinerator Authority v. Honeywell,* and *Hackensack Riverkeeper v. Honeywell,* 05-5955 (consolidated), (D. NJ) (entered January 21, 2010) requires Honeywell to engage in additional remediation of chromium contaminated soils in the event of sewer repair or replacement at Site 153. The approval Honeywell seeks from NJDEP does not in any way impact Honeywellôs obligations pursuant to Paragraph 71 of the Consent Decree.

This footnote is the only instance in the Site 153 RIR/RAWP/RAR that attempts to summarize Honeywellôs ongoing obligation to remediate Site 153 pursuant to paragraph 71 of the Consent Decree. While other sections of the Site 153 RIR/RAWP/RAR cite paragraph 71, this reference will not be understood by the ordinary reader of the document. Therefore, plaintiffs request that Honeywell provide further explanatory language in the Site 153 RIR/RAWP/RAR, as set forth in Nos. 1-4 below, to make clear the status of Site 153 remediation and Honeywellôs on-going obligations.

1. The Executive Summary (p. ES-3) includes the heading: ñSite 153 Morris Canal Site - Remedial Actions Completed.ò This section of the Executive Summary precedes footnote 1 and does not mention Honeywellôs ongoing obligations at Site 153. Therefore, plaintiffs request that Honeywell add the following language to the end of the section:

> In the event of sewer repair or replacement at Site 153, which is expected to occur from time to time to maintain efficient operations, Honeywell is required to engage in additional remediation of chromium contaminated soils at Site 153. *See* Paragraph 71 of the Consent Decree Regarding Sites 79 and 153 South (Consent Decree) in *Jersey City Municipal Utilities Authority v. Honeywell, Jersey City Incinerator Authority v. Honeywell,* and *Hackensack Riverkeeper v. Honeywell,* 05-5955 (consolidated), (D. NJ) (entered January 21, 2010) (ECF No. 301).

2. The Remedial Action Report (ñRARò) is a stand-alone document. The Introduction to the RAR, p. 59 of the Site 153 RIR/RAWP/RAR (section 7.0), should set forth Honeywellôs ongoing obligation to remediate Site 153. Therefore, plaintiffs request that Honeywell make the following changes to the bullet point that begins: ñSite 153 South (south of NJCU property)ò.

Å Remove the last phrase, which says: ñ(subject to the provisions of Paragraph 71 of the

Consent Decree, as previously noted).ò

Å Replace the phrase with: ñIn the event of sewer repair or replacement at Site 153, which is expected to occur from time to time to maintain efficient operations, Honeywell is required to engage in additional remediation of chromium contaminated soils at Site 153. *See* Paragraph 71 of the Consent Decree Regarding Sites 79 and 153 South (Consent Decree) in *Jersey City Municipal Utilities Authority v. Honeywell, Jersey City Incinerator Authority v. Honeywell,* and *Hackensack Riverkeeper v. Honeywell,* 05-5955 (consolidated), (D. NJ) (entered January 21, 2010) (ECF No. 301).ò

3. Honeywell should cross-reference footnote 1 when the paragraph 71 requirement of the Consent Decree is mentioned in the Site 153 RIR/RAWP/RAR on pages 48 and 61.

4. Honeywell should set forth the paragraph 71 requirements of the Consent Decree in its discussion of future expansion of Route 440. The Site 153 RIR/RAWP/RAR , p. 57, states:

> Future road expansion and improvements are anticipated to expand Route 440 into a multilane boulevard in the area of the Site. The road expansion project may require future modification of the engineering controls and deed notices.

Plaintiffs request that Honeywell add the following language at the end of the quoted sentences:

> The road expansion may also trigger Honeywellôs obligation to engage in additional remediation of chromium contaminated soils at Site 153 pursuant to Paragraph 71 of the Consent Decree. *See* page ES-4, footnote 1.

Honeywell should correct an apparently misplaced page in Appendix B-3. A page in the middle of Appendix B-3 of the Site 153 RIR/RAWP/RAR, Volume 2, appears to be there in error. The page contains text beginning in the middle of a sentence, while the remainder of the Appendix consists of figures. The misplaced page is located before figure 3.4-2 in Appendix B-3. Plaintiffs request that this page be removed or that the Appendix otherwise be corrected.

* * *

Thank you for your attention to this matter. We look forward to Honeywellôs response.

Sincerely,

Bruce J. Terris
Carolyn Smith Pravlik
Kathleen L. Millian
Benjamin S. Davis*

Counsel for Plaintiffs

**Admitted only in Maryland, practicing under the supervision of Kathleen L. Millian, a member of the D.C. Bar.*

cc: John Morris
William Hague
Donna Russo
Resa Drasin

New Jersey Department of Environmental Protection
Site Remediation Program
PRELIMINARY ASSESSMENT / SITE INVESTIGATION
(Also Use this Form For Unknown Source Investigations)
☒ PA ☒ SI ☐ Unknown Source Investigation

Date Stamp
(For Department use only)

A Phase I or Phase II is not equivalent to a Preliminary Assessment or Site Investigation; therefore, they not acceptable substitutions.

SECTION A. SITE NAME AND LOCATION

Site Name: Hudson County Chromate Site 153 (COPR)

List all AKAs: Former Morris Canal

Street Address: Along Route 440 Northbound shoulder, between Carbon Place and Danforth Avenue

Municipality: Jersey City (Township, Borough or City)

County: Hudson Zip Code: 07305

Incident Number(s)/Com. Center Number(s):

Program Interest (PI) Number(s): G000008767

Case Tracking Number(s) for this submission: RPC930001

Date Remediation Initiated Pursuant to N.J.A.C. 7:26C-2: 06/17/1993

State Plane Coordinates for a central location at the site: Easting: 603480 Northing: 684304

Municipal Block(s) and Lot(s):

Block #	21902	Lot #	1	Block #		Lot #	
Block #	26704	Lot #	5	Block #		Lot #	
Block #		Lot #		Block #		Lot #	
Block #		Lot #		Block #		Lot #	

SECTION B. SUBMISSION STATUS

1. Indicate how the Electronic Data Deliverable (EDD) for this submission is being provided to the NJDEP:
   - ☐ Via Email at srpedd@dep.state.nj.us (attach NJDEP confirmation email); or
   - ☒ CD (attach to this submission)
   - ☐ PA only – No EDD
2. Complete the following Submission and Permit Status Table:

	N/A	Included in this Submission	Previously Submitted	Date Of Submission	Date of Revised Submission	Date of Previous NJDEP Approval	Date of Document Withdrawal
Alternative Soil Remediation Standard and/or Screening level Application Form	☒	☐	☐				
Case Inventory Document		☒					
Discharge to Ground Water Permit by Rule Authorization Request	☒	☐	☐				
IEC Engineered System Response Action Report	☒	☐	☐				
Immediate Environmental Concern Report	☒	☐	☐				
LNAPL Interim Remedial Measure Report	☒	☐	☐				
Preliminary Assessment Report	☐	☒	☐				
Public Notification	☐	☐	☒	08/20/2009			
Receptor Evaluation	☐	☒	☐				

Remedial Action Report	☐	☒	☐				
Remedial Action Work Plan	☐	☒	☐				
Remedial Investigation Report	☐	☒	☐				
Response Action Outcome	☒	☐	☐				
Site Investigation Report	☒	☐	☐				
Technical Impracticability Determination	☒	☐	☐				
Vapor Concern Mitigation Report	☒	☐	☐				
Permit Application – list:	☒						
		☐	☐				
		☐	☐				
		☐	☐				
		☐	☐				
Radionuclide Remedial Action Report	☒	☐	☐				
Radionuclide Remedial Action Workplan	☒	☐	☐				
Radionuclide Remedial Investigation Report	☒	☐	☐				
Radionuclide Remedial Investigation Workplan	☒	☐	☐				

SECTION C. SITE USE

Current Site Use: (*check all that apply*)

☐ Industrial ☐ Agricultural
☐ Residential ☐ Park or recreational use
☐ Commercial ☐ Vacant
☐ School or child care ☐ Government
☒ Other: utility easement

Intended Future Site Use, if known: (*check all that apply*)

☐ Industrial ☐ Park or recreational use
☐ Residential ☐ Vacant
☐ Commercial ☐ Government
☐ School or child care ☐ Future site use unknown
☐ Other: utility easement

SECTION D. CASE TYPE: (*check all that apply*)

☒ Administrative Consent Order (ACO)
☐ Brownfield Development Area (BDA)
☐ Child Care Facility
☒ Chrome Site (Chromate chemical production waste)
☐ Coal Gas
☐ Due Diligence with RAO
☐ Hazardous Discharge Remediation Fund (HDSRF) Grant/Loan
☐ ISRA
☐ Landfill (SRP subject only)
☐ Regulated Underground Storage Tank (UST)
☐ Remediation Agreement (RA)/Remediation Certification
☐ School Development Authority (SDA)
☐ School facility
☐ Spill Act Defense – Government Entity
☐ Spill Act Discharge
☐ UST Grant/Loan
☐ Other: _____

Federal Case (*check all that apply*)

☐ RCRA GPRA 2020 ☐ CERCLA/NPL ☐ USDOD ☐ USDOE

1. Is the party conducting remediation a government entity? ☐ Yes ☒ No

If "Yes," check one: ☐ Federal ☐ State ☐ Municipal ☐ County

SECTION E. PUBLIC FUNDS

Did the remediation utilize public funds? ☐ Yes ☒ No

If "Yes," check applicable:

☐ UST Grant ☐ UST Loan ☐ Brownfield Reimbursement Program
☐ HDSRF Grant ☐ HDSRF Loan ☐ Landfill Reimbursement Program
☐ Spill Fund ☐ Schools Development Authority ☐ Environmental Infrastructure Trust

SECTION F. GENERAL

1. Prior to this submission have any NFAs/RAOs been issued for this site? ☐ Yes ☒ No
   a. Does the site currently have a Deed Notice? ☒ Yes ☐ No
   b. Does the site currently have a Classification Exception Area (CEA)? ☒ Yes ☐ No
   c. Has an order of magnitude evaluation been performed? ☐ Yes ☐ No ☒ N/A
2. Is the ground water at the site classified as a Class I Ground Water? ☐ Yes ☒ No
3. Are there potable wells on-site? ☐ Yes ☒ No
4. Has the remediation varied from the Technical Rules? ☐ Yes ☒ No

   If "Yes." provide the citation(s) from which the remediation has varied and the page(s) in the attached document where the rationale for the variance is provided.

   N.J.A.C. 7:26E-_____ Page _____

   N.J.A.C. 7:26E-_____ Page _____

   N.J.A.C. 7:26E-_____ Page _____

5. **Areas of Concern:**
   a) For PA or PA/SI Report, list each AOC.
   b) For SI Report or Unknown Source Investigation, check **only** AOCs documented in this submission

	Area of Concern	Currently Exists? ☒ if "Yes"	Formerly Existed? ☒ if "Yes"	Investigation: SI Conducted ☒ if "Yes"	Investigation: RI Proposed ☒ if "Yes"
1	Above ground storage tank and associated piping	☐	☐	☐	☐
2	Area of stressed vegetation	☐	☐	☐	☐
3	Area which receives flood or storm water from potentially contaminated areas	☐	☐	☐	☐
4	Chemical storage cabinet and closet	☐	☐	☐	☐
5	Compressor vent discharge	☐	☐	☐	☐
6	Discharge area pursuant to N.J.A.C. 7:1E	☐	☐	☐	☐
7	Discolored or spill area	☐	☐	☐	☐
8	Drainage swale and culvert	☐	☐	☐	☐
9	Drywell and sump	☐	☐	☐	☐
10	Dumpster	☐	☐	☐	☐
11	Electrical transformer and capacitor	☐	☐	☐	☐
12	Floor drain collection system	☐	☐	☐	☐
13	Former agricultural applied pesticide area	☐	☐	☐	☐
14	Hazardous material storage or handling area	☐	☐	☐	☐
15	Historic fill or any other fill material	☒	☒	☒	☒
16	Hydraulic lift	☐	☐	☐	☐
17	Incinerator	☐	☐	☐	☐
18	Landfill or landfarm	☐	☐	☐	☐
19	Loading and unloading area	☐	☐	☐	☐
20	Non-contact cooling water discharge	☐	☐	☐	☐
21	Open area away from production area	☐	☐	☐	☐
22	Piping, above ground and below ground pumping station, sump and pit	☐	☐	☐	☐
23	Process area sink and piping which receive process waste	☐	☐	☐	☐
24	Rail car	☐	☐	☐	☐

25	Roof leader when process operations vent to the roof	☐	☐	☐	☐
26	Septic system, leachfield or seepage pit	☐	☐	☐	☐
27	Silo	☐	☐	☐	☐
28	Sprayfield	☐	☐	☐	☐
29	Storage pad including drum and/or waste storage	☐	☐	☐	☐
30	Storm sewer and spill containment collection system	☐	☐	☐	☐
31	Storm water detention pond and fire pond	☐	☐	☐	☐
32	Surface impoundment and lagoon	☐	☐	☐	☐
33	Surface water body	☐	☐	☐	☐
34	Underground piping including industrial process sewer	☐	☐	☐	☐
35	Underground storage tank and associated piping	☐	☐	☐	☐
36	Waste pile as defined by N.J.A.C. 7:26	☐	☐	☐	☐
37	Waste water treatment	☐	☐	☐	☐
38	Other: Hexavalent chromium-impacted fill	☒	☒	☒	☒

SECTION G. PRELIMINARY ASSESSMENT

Complete this section only if you are submitting a PA

1. Was an inspection of the site conducted? ☒ Yes ☐ No

   Date of the most recent inspection: 09/24/2014

2. Did the PA identify any areas of concern? ☒ Yes ☐ No

3. Identify the location in the report (e.g. page #, Figure #, Appendix #) of the site map showing AOCs: Figure 1B

4. Identify all current and historic industrial, commercial, agricultural or residential uses at the site dating back to the time the site was naturally vegetated.

   Provide the current and historic operators/operations. (attach additional sheets as necessary)

Name of Operator	Type of Operation – e.g., dry cleaning, electro-plating, residence	Dates of Operation Start	End
Multiple entities	utility easement, railroad, former canal (Morris Canal)		
	(see RIR Section 2.6 for detailed history of site operations)		

5. Have all regulated USTs on site been registered with the NJDEP? ☐ Yes ☐ No ☒ NA

   If "No," complete and submit an UST Facility Certification Questionnaire to the NJDEP to update the registration prior to submitting this form.

6. Have all regulated USTs that have been closed been delisted from the registration? ☐ Yes ☐ No ☒ NA

   If "No," complete and submit an UST Facility Certification Questionnaire to the NJDEP to update the registration prior to submitting this form.

7. Have any USTs been removed on/after September 4, 1990? ☐ Yes ☐ No ☒ NA

8. Including this submission, has an SI/RI report been submitted for all USTs closed on/after September 4, 1990? ☐ Yes ☐ No ☒ NA

SECTION H. SITE INVESTIGATION

Complete this section only if you are submitting a SI or Unknown Source Investigation Report

1. Does the SI address:
   - ☐ Area(s) of Concern (AOCs) Only
   - ☒ Entire Site (Based on a completed and submitted Preliminary Assessment/Site Investigation)
2. Total number of contaminated AOCs associated with the case: 2
3. Total number of contaminated AOCs addressed in this submission: 2
4. Identify the media impacted above applicable standards/screening levels (*check all that apply*).

   ☒ Soil ☒ Ground water ☐ Sediment ☐ Surface water
   ☐ Soil gas ☐ Indoor air
   ☐ No sampling results above applicable standards/screening levels.

   If any media have been impacted above applicable standards/screening levels, identify the type of contamination below (*check all that apply*).

Soil	Ground Water	Sediment	Surface Water	Type Of Contamination
☐	☐	☐	☐	Volatile Organics
☒	☐	☐	☐	Polycyclic Aromatic Hydrocarbons(PAHs)
☐	☐	☐	☐	Acid Extractables
☐	☐	☐	☐	Base Neutrals (non-PAHs)
☒	☒	☐	☐	Metals (other than arsenic, chromium & mercury)
☐	☐	☐	☐	Pesticides
☐	☐	☐	☐	PHC
☐	☐	☐	☐	PCBs
☒	☒	☐	☐	Chromium
☐	☐	☐	☐	Dioxin
☒	☐	☐	☐	Mercury
☒	☐	☐	☐	Arsenic
☐	☐	☐	☐	Perchlorate, RDX, TNT, etc.
☐	☐	☐	☐	Other, specify:_____

5. Has a well search been conducted pursuant to N.J.A.C. 7:26E-1.14? ☒ Yes ☐ No

   If "Yes," are there any potable wells within 200' of the contaminated AOCs listed in Section F above or within 200' of the site boundary? ☐ Yes ☒ No
6. Has the presence of free product been identified? ☐ Yes ☒ No
7. Is an environmentally sensitive natural resource (ESNR) present on, adjacent to, or potentially impacted by the site? ☐ Yes ☒ No

   If "Yes," provide the following information:

   a. Specify the section/page(s) of the report where the site map showing the location of all ESNRs can be found (e.g. page #, Figure #, Appendix #): _____

   b. Are there visible signs of impact/impairment (e.g., discolored media, stressed vegetation, discharge/spill, seeps, fish kill)? ☐ Yes ☐ No

   c. Were land use permits required to complete any of the investigative activities? ☐ Yes ☐ No

   d. Specify the section/page(s) of the report where the land use permits are discussed: _____
8. Have Alternative Soil Remediation Standards (ASRS) been utilized for Inhalation and/or Ingestion/Dermal pathways? ☐ Yes ☒ No

9. Are you proposing an alternative remediation standard pursuant to N.J.A.C. 7:26D-7.4, alternate vapor intrusion screening level, or ecological site specific goal? ☐ Yes ☒ No

If "Yes," attach the Alternative Remediation Standard and/or Screening Level Application Form as an addendum.

10. Was a site-specific screening level developed for the evaluation of the VI pathway? ☐ Yes ☒ No

11. Have any site specific Impact to Groundwater Soil Remediation Standards (IGWSRS) been established? ☐ Yes ☒ No

12. Was an Interim Soil Remediation Standard proposed where a Standard does not currently exist? ☐ Yes ☒ No

If "Yes," attach the Alternative Remediation Standard and/or Screening Level Application Form as an addendum.

13. Is Historic Fill present? ☒ Yes ☐ No

If "Yes":

a). What is the evidence that Historic Fill is present?

Field observations from soil boring logs and NJDEP mapped area of historic fill

b). Are any other AOCs co-located within the Historic Fill? ☒ Yes ☐ No

If "Yes," have the same contaminant types (e.g. lead arsenic, etc.) characterized as being present in the Historic Fill been sampled for as contaminants of concern at these co-located AOCs? ☒ Yes ☐ No

14. Is ground water contamination present above applicable standards? ☒ Yes ☐ No

If "Yes,":

a). Describe conditions:

Chromium is present in groundwater above the Ground Water Quality Standards

b). Is contaminated ground water present in bedrock aquifer? ☐ Yes ☒ No

c). Is ground water contamination present at levels above Vapor Intrusion Screening Levels? ☐ Yes ☒ No

If "Yes,":

1). Was a vapor intrusion investigation conducted? ☐ Yes ☐ No

2). Has a Vapor Concern (VC) or Immediate Environmental Concern (IEC) condition been identified? ☐ Yes ☐ No

15. Has a discharge occurred from a Federally regulated UST that has not received an NFA/RAO? ☐ Yes ☒ No

Note: An UST system **is** Federally regulated *unless* one of the following conditions apply:

- The UST system is less than 110 gallons in rated volume;
- The UST system is a SUMP as defined in the UST regulations at N.J.A.C. 7:14B-1.6;
- The hazardous substance stored in the UST system is a RCRA regulated waste;
- The UST system contained heating oil used exclusively for onsite consumption;
- The UST system was used for motor fuel for non-commercial farm or residential purposes and the total rated capacity of all motor fuel USTs at the site is less than 1,100 gallons.

If you answered "Yes," to question 11. provide the following information:

Date Discharge Occurred or Identified: _____

Date Discharge Reported to the NJDEP: _____

Media Contaminated (*check all that apply*):

☐ Soil ☐ Groundwater ☐ Surface Water Receiving Water: _____

Tank ID (from Registration): _____ Tank System Size: _____

Contents: _____

If a Confirmed Discharge Notification (CDN) form has not been previously submitted to the NJDEP specifically for the discharge from a Federally Regulated UST, attach a completed CDN form to this submission.

16. Have all regulated USTs addressed in this submission been registered with the NJDEP? ☐ Yes ☐ No ☒ NA
If "No," complete and submit an UST Facility Certification Questionnaire to the NJDEP to update the registration prior to submitting this form.

17 Have all regulated USTs addressed in this submission that have been closed been delisted from the registration? ☐ Yes ☐ No ☒ NA
If "No," complete and submit an UST Facility Certification Questionnaire to the NJDEP to update the registration prior to submitting this form.

18. Are there any AOCs at which an SI was conducted and an RI/RA is not proposed? ☐ Yes ☒ No
If "Yes," answer the following questions, if "No," proceed to next section.

Answer the following questions ONLY for AOCs at which an SI was conducted and an RI and/or RA is not proposed:

19. Are any soil analytical results greater than the most stringent Direct Contact Soil Remediation Standards (DCSRS)? ☐ Yes ☐ No

20 Are any soil analytical results greater than the default Impact to Ground Water Soil Screening Levels (IGWSSL)? ☐ Yes ☐ No

21. Are any ground water analytical results greater than the Ground Water Quality Standards (GWQS)? ☐ Yes ☐ No ☐ NA

22. Are any Reporting Limits (RLs) greater than the applicable soil and/or ground water standards or screening levels? ☐ Yes ☐ No

23. Are any surface water analytical results greater than the most stringent Surface Water Quality Standards? ☐ Yes ☐ No ☐ NA

24. Are any sediment analytical results above the screening levels? ☐ Yes ☐ No ☐ NA

25. Are any soil analytical results greater than Soil Ecological Screening Criteria in an Environmentally Sensitive Natural Resource (ESNR)? ☐ Yes ☐ No ☐ NA

26. Are any analytical results above the vapor intrusion screening levels? ☐ Yes ☐ No ☐ NA

27. Did the SI demonstrate via background investigation per N.J.A.C. 7:26E-3.8 that contamination is naturally occurring? ☐ Yes ☐ No ☐ NA

28. Did the SI demonstrate via background investigation per N.J.A.C. 7:26E-3.9, that contamination is migrating onto this site? ☐ Yes ☐ No ☐ NA

29. Contamination is associated with an ongoing ISRA remediation not related to this investigation. ☐ Yes ☐ No ☐ NA

SECTION I. LABORATORY DATA

Complete only if sampling was conducted

1. Were all data submitted in the appropriate full and/or reduced formats according to the deliverables defined in N.J.A.C. 7:26E-2? ☒ Yes ☐ No

2. Do all data submitted meet the quality assurance/quality control (QA/QC) requirements incorporated by reference in N.J.A.C. 7:26E-2 for:
   sampling ☒ Yes ☐ No
   analysis ☒ Yes ☐ No

3. How was it determined that the data complied with the QA/QC requirements? *(check all that apply)*
   - ☐ Laboratory non-conformance summary/narrative
   - ☐ Laboratory correspondence
   - ☐ LSRP review
   - ☒ Independent contractor review
   - ☐ Other: _____

4. Has any data been qualified and used? ☒ Yes ☐ No

5. Has any data been rejected and used? ☐ Yes ☒ No

6. Provide the page number for the "Reliability of Data" section of the report: 40

SECTION J. PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION AND CERTIFICATION

Full Legal Name of the Person Responsible for Conducting the Remediation:

Representative First Name: John Representative Last Name: Morris

Title: Remediation Director

Phone Number: (973) 455-4003 Ext: Fax:

Mailing Address: 101 Columbia Road

City/Town: Morristown State: New Jersey ZIP Code: 07305

Email Address: John.Morris@honeywell

This certification shall be signed by the person responsible for conducting the remediation who is submitting this notification in accordance with Administrative Requirements for the Remediation of Contaminated Sites rule at N.J.A.C. 7:26C-1.5(a).

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein, including all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, to the best of my knowledge, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties.

Signature: John J. Morris Date: 12/12/14

Name/Title: John Morris/Remediation Director

No changes to contact information since last submission ☒

SECTION K. LICENSED SITE REMEDIATION PROFESSIONAL INFORMATION AND STATEMENT

LSRP ID Number: Not applicable

First Name: _____ Last Name: _____

Phone Number: _____ Ext: _____ Fax: _____

Mailing Address: _____

City/Town: _____ State: _____ Zip Code: _____

Email Address: _____

This statement shall be signed by the LSRP who is submitting this notification in accordance with section 14 of P.L.2009 c.60 (N.J.S.A. 58:10C-14), and paragraphs (1) and (2) of subsection b. of section 30 of P.L.2009 c.60 (N.J.S.A. 58:10B=1.3b(1) and (2)).

I certify that I am a Licensed Site Remediation Professional authorized pursuant to N.J.S.A. 58:10C to conduct business in New Jersey. As the Licensed Site Remediation Professional of record for this remediation, I:

[SELECT ONE OR BOTH OF THE FOLLOWING AS APPLICABLE]:

☐ *directly oversaw and supervised all of the referenced remediation, and\or*

☐ *personally reviewed and accepted all of the referenced remediation presented herein.*

I believe that the information contained herein, and including all attached documents, is true, accurate and complete.

It is my independent professional judgment and opinion that the remediation conducted at this site, as reflected in this submission to the Department, conforms to, and is consistent with, the remediation requirements in N.J.S.A. 58:10C-14.

My conduct and decisions in this matter were made upon the exercise of reasonable care and diligence, and by applying the knowledge and skill ordinarily exercised by licensed site remediation professionals practicing in good standing, in accordance with N.J.S.A. 58:10C-16, in the State of New Jersey at the time I performed these professional services.

I am aware pursuant to N.J.S.A. 58:10C-17 that for purposely, knowingly or recklessly submitting false statement, representation or certification in any document or information submitted to the board or Department, etc., that there are significant civil, administrative and criminal penalties, including license revocation or suspension, fines and being punished by imprisonment for conviction of a crime of the third degree.

LSRP Signature: _____ Date: _____

LSRP Name/Title: _____

Company Name: _____

No changes to contact information since last submission ☐

Completed forms should be sent to:

Bureau of Case Assignment & Initial Notice
Site Remediation Program
NJ Department of Environmental Protection
401-05H
PO Box 420
Trenton, NJ 08625-0420

New Jersey Department of Environmental Protection
Site Remediation Program

RECEPTOR EVALUATION (RE) FORM

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Hudson County Chromate Site 153 (COPR)

List all AKAs: Former Morris Canal

Street Address: Along Route 440 Northbound shoulder, between Carbon Place and Danforth Avenue

Municipality: Jersey City (Township, Borough or City)

County: Hudson Zip Code: 07305

Program Interest (PI) Number(s): G000008767 Case Tracking Number(s): RPC930001

Indicate the type of submission:

☐ Initial RE Submission

☒ Updated RE Submission

Indicate the reason for submission of an updated RE form

☐ Submission of an Immediate Environmental Concern (IEC) source control report;

☒ Submission of a Remedial Investigation Report;

☒ Submission of a Remedial Action Report;

Check if included in updated RE

☐ The known concentration or extent of contamination in any medium has increased;

☐ A new AOC has been identified;

☐ A new receptor is identified;

☐ A new exposure pathway has been identified.

SECTION B. ON SITE AND SURROUNDING PROPERTY USE

1. Identify any sensitive populations/uses that are currently on-site or surrounding property usage within 200 feet of the site boundary (check all that apply):

	On-site	Off-site
None of the following	☒	☐
Residences or residential property	☐	☒
Public or Private Schools grades K-12	☐	☐
Child care centers	☐	☐
Public parks, playgrounds or other recreation areas	☐	☐
Other sensitive population use(s) Explain _____	☐	☐

If any of the above applies, attach a list of addresses, facility names, type of use, and a map depicting each location relative to the site.

2. Current site uses (check all that apply):

☐ Industrial ☐ Residential ☐ Commercial ☐ Agricultural
☐ School or child care ☐ Government ☐ Park or recreational use
☐ Vacant ☒ Other: Utility easement

3. Planned future site uses and off-site use within 200 ft of site boundary (check all that apply):

☐ Industrial ☒ Residential ☒ Commercial ☐ Agricultural
☐ School or child care ☐ Government ☐ Park or recreational use
☐ Vacant ☒ Other: Utility easement

Provide a map depicting the location of the proposed changes in land use.

SECTION C. DESCRIPTION OF CONTAMINATION

1. Identify if any of the following exist at the site (check all that apply):
   - ☐ Free product [N.J.A.C. 7:26E-1.8] identified is ☐ LNAPL* or ☐ DNAPL**. Date identified: _____
   - ☐ Residual product [N.J.A.C. 7:26E-1.8]
   - ☒ Other high concentration source materials not identified above (e.g., buried drums, containers, unsecured friable asbestos)

     Explain: Fill material containing chromium ore processing residue (COPR)

   * LNAPL – measured thickness of .01 feet or more

   **DNAPL – See US EPA DNAPL Overview

2. Soil Migration Pathway

   Has soil contamination been delineated to the applicable Direct Contact Soil Remediation Standard? ..... ☒ Yes ☐ No

   Are all soils either below the applicable Direct Contact Criteria or under an institutional control (i.e. deed notice)? ..... ☒ Yes ☐ No

3. If this evaluation is submitted with a technical document that includes contaminant summary information, proceed to Section D. Otherwise attach a brief summary of all currently available data and information to be included in the site investigation or remedial investigation report.

SECTION D. GROUND WATER USE

1. Has the requirement for ground water sampling been triggered? ..... ☒ Yes ☐ No ☐ Unknown
   If "No," proceed to Section F. If "Unknown," explain:

   _____

2. Is Ground water contaminated above the Ground Water Remediation Standards [N.J.A.C.7:9C]? ..... ☒ Yes ☐ No ☐ Unknown

   Or ☐ Awaiting laboratory data with the expected due date: _____

   If "Yes," provide the date that the laboratory data was available and confirmed contamination above the Ground Water Remediation Standards. Date: 07/30/1999

   If "Unknown," explain: _____

   If "No," or awaiting laboratory data proceed to Section F.

3. Has ground water contamination been delineated to the applicable Remediation Standard? ..... ☒ Yes ☐ No
4. Has a well search been completed? ..... ☒ Yes ☐ No

   Date of most recent or updated well search: 10/13/2014

   Identify if any of the following conditions exist based on the well search [N.J.A.C.7:26E-1.14(a)] (check all that apply):
   - ☐ Potable wells located within 500 feet from the downgradient edge of the currently known extent of contamination.
   - ☐ Potable well located 250 feet upgradient or 500 feet side gradient of the currently known extent of contamination.
   - ☐ Ground water contamination is located within a Tier 1 wellhead protection area (WHPA).

5. Is a completed Well Search Spreadsheet or historical well search table attached and has an electronic copy of the spreadsheet been submitted to srpgis_wrs@dep.state.nj.us. ..... ☒ Yes ☐ No

   If "No," explain: Well search spreadsheet previously submitted 03/01/2011

6. Are any private potable or irrigation wells located within ½ mile of the currently known extent of contamination? ..... ☐ Yes ☒ No

   If "Yes," was a door to door survey completed? ..... ☐ Yes ☐ No

   If survey was not completed explain: _____

7. Has sampling been conducted of ☐ potable well(s) and /or ☐ non-potable use well(s)? ..... ☐ Yes ☒ No

   If "No," provide justification then proceed to Section E.

   No wells identified within applicable distance for sampling

8 Has contamination been identified in potable well(s) above Ground Water Remediation Standards that is not suspected to be from the site? (If "Yes," provide justification) ☐ Yes ☐ No

_____

9 Has contamination been identified in potable well(s) that is above the Ground Water Remediation Standards or Federal Drinking Water Standards? ☐ Yes ☐ No

Provide date laboratory data was received: _____

Or ☐ awaiting laboratory data with the expected due date: _____

If "Yes" for potable well contamination **not attributable to background**, follow the IEC Guidance Document at http://www.nj.gov/dep/srp/guidance/index.html#iec for required actions and answer the following:

Has an engineered system response action been completed on all receptors? ☐ Yes ☐ No

Provide a brief narrative description:

Date completed: _____ NJDEP Case Manager: _____

10. Were Non-potable use well(s) sampled and results were above Class II Ground Water Remediation Standards? ☐ Yes ☐ No

Provide date laboratory data was received: _____

Or ☐ awaiting laboratory data with the expected due date: _____

11. Has the ground water use evaluation been completed? ☐ Yes ☐ No

SECTION E. VAPOR INTRUSION (VI)

1. Contaminants present in ground water exceed the Vapor Intrusion Ground Water Screening Levels that trigger a VI evaluation. (see NJDEP Vapor Intrusion Technical Guidance). ... ☐ Yes ☒ No ☐ Unknown

Or ☐ Awaiting laboratory data and the expected due date: _____

Provide the date that the laboratory data was available and confirmed contamination above the Vapor Intrusion Trigger Levels. Date: _____

2. Other existing conditions that trigger a VI evaluation. (see NJDEP Vapor Intrusion Technical Guidance)

☐ Wet basement or sump containing free product or ground water containing volatile organics
☐ Methane generating conditions causing oxygen deficient or explosion concern
☐ Other human or safety concern from the VI pathway (i.e. elemental mercury, unsaturated contamination, elevated soil gas or indoor vapor (explain):

If you answered "No," or awaiting laboratory data to Question 1., *and* did not check any boxes in Question 2, proceed to Section F, "Ecological Receptors", otherwise complete the rest of this section.

3. Has ground water contamination been delineated to the applicable Ground Water Vapor Screening Level? ☐ Yes ☐ No

4. Was a site specific screening level, modeling or other alternative approach employed for the VI pathway? ☐ Yes ☐ No

5. Identify and locate on a scaled map any buildings/sensitive populations that exist within the following distances from ground water contamination with concentrations above the Vapor Intrusion Ground Water Screening Levels or specific threats (check all that apply):

☐ 30 feet of petroleum free product or dissolved petroleum hydrocarbon contamination in ground water
☐ 100 feet of any non-petroleum free product or any non-petroleum dissolved volatile organic ground water contamination
☐ No buildings exist within the specified distances

6. The vapor intrusion pathway is a concern at or adjacent to the site (if "No," attach justification) ☐ Yes ☐ No

7. Has soil gas sampling of the building(s) been conducted? ☐ Yes ☐ No ☐ N/A
   If "No," or "N/A," proceed to #10

8. Has indoor air sampling been conducted at the identified building(s)? ☐ Yes ☐ No
   If "No," proceed to #10

9 Has indoor air contamination been identified but not suspected to be from the site?
   (if "Yes," attach justification) ☐ Yes ☐ No

10. Indoor air results were above the NJDEP's Rapid Action Levels. ☐ Yes ☐ No

    Provide the date that the laboratory data was available and confirmed contamination above the Rapid Action Levels. Date: _____

    Or ☐ Awaiting laboratory data with the expected due date: _____

    If "Yes" to #10 above, follow the IEC Guidance Document at http://www.nj.gov/dep/srp/guidance/index.html#iec **for required actions.**

    The IEC engineering system response for control was implemented for all identified structures ☐ Yes ☐ No

    Date: _____ NJDEP Case Manager: _____

11. Indoor air sampling was conducted and results were above the NJDEP's Indoor Air Screening Levels but at or below the Rapid Action Levels ☐ Yes ☐ No

    Provide the date that the laboratory data was available. Date: _____

    Or ☐ Awaiting laboratory data with the expected due date: _____

    If "Yes" to #11 above, answer the following:

    Has the Vapor Concern (VC) Response Action Form notifying the NJDEP of the exceedances been submitted? ☐ Yes ☐ No
    Date: _____

    Has a plan to mitigate and monitor the exposure been submitted? ☐ Yes ☐ No
    Date: _____

    Has the Mitigation Response Action Report been submitted? ☐ Yes ☐ No
    Date: _____

12. Has the vapor intrusion investigation been completed? ☐ Yes ☐ No
    If "No", is the vapor intrusion investigation stepping out as part of the site investigation or remedial investigation. (If "No," attach justification) ☐ Yes ☐ No

SECTION F. ECOLOGICAL RECEPTORS

1. Has an Ecological Evaluation (EE) has been conducted? [N.J.A.C. 7:26E-1.16] ☒ Yes ☐ No
   Date conducted: _____
2. Do the results of an EE trigger a remedial investigation of ecological receptors? [N.J.A.C. 7:26E-4.8] ☐ Yes ☒ No
3. Has a remedial investigation of ecological receptors been conducted? ☐ Yes ☒ No
   Date conducted: _____
4. Provide the following information for any surface water body on or within 200 feet of the site:

Surface Water Body Name	Stream Classification	Antidegradation Designation	Trout Production	Trout Maintenance
Not applicable			☐	☐
			☐	☐
			☐	☐
			☐	☐
			☐	☐
			☐	☐

5. Does the site contain any features regulated by the Land Use Regulation Program (LURP)? (e.g. wetlands, flood hazard area, tidelands, etc.) ☐ Yes ☒ No

   If "Yes," identify the type(s) of features: _____

6. Have any formal LURP jurisdiction letters or approvals been issued for the site? ☐ Yes ☒ No

   If "Yes," what is the LURP Program Interest (PI) number(s) for the site? _____

7. Have any applications for formal LURP jurisdiction letters or approvals been submitted the NJDEP? ☐ Yes ☒ No

   If "Yes," what is the LURP Program Interest (PI) number(s) for the site? _____

8. Is free product or residual product located within 100 feet from an ecological receptor? ☐ Yes ☒ No

9. Available data indicate an impact on: ☐ Ecological receptor(s) ☐ Surface water ☐ Sediment

If this evaluation is submitted with a technical document that includes contaminant summary information, proceed to Section G. Otherwise attach a description of the type of contamination and provide a schedule and a description of all actions to be taken to mitigate exposure.

SECTION G. PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION AND CERTIFICATION

Full Legal Name of the Person Responsible for Conducting the Remediation: _____

Representative First Name: John Representative Last Name: Morris

Title: Remediation Director

Phone Number: (973) 455-4003 Ext: _____ Fax: _____

Mailing Address: 101 Columbia Road

City/Town: Morristown State: New Jersey Zip Code: 07962

Email Address: John.Morris@honeywell.com

This certification shall be signed by the person responsible for conducting the remediation who is submitting this notification in accordance with Administrative Requirements for the Remediation of Contaminated Sites rule at N.J.A.C. 7:26C-1.5(a).

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein, including all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, to the best of my knowledge, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties.

Signature: John J. Morris Date: 12/12/14

Name/Title: John Morris/Remediation Director **No Changes Since Last Submittal** ☒

SECTION H. LICENSED SITE REMEDIATION PROFESSIONAL INFORMATION AND STATEMENT

LSRP ID Number: Not applicable

First Name: _____ Last Name: _____

Phone Number: _____ Ext: _____ Fax: _____

Mailing Address: _____

City/Town: _____ State: _____ Zip Code: _____

Email Address: _____

This statement shall be signed by the LSRP who is submitting this notification in accordance with SRRA Section 16 d. and Section 30 b.2.

I certify that I am a Licensed Site Remediation Professional authorized pursuant to N.J.S.A. 58:10C to conduct business in New Jersey. As the Licensed Site Remediation Professional of record for this remediation, I:

[SELECT ONE OR BOTH OF THE FOLLOWING AS APPLICABLE]:

☐ *directly oversaw and supervised all of the referenced remediation, and\or*

☐ *personally reviewed and accepted all of the referenced remediation presented herein.*

I believe that the information contained herein, and including all attached documents, is true, accurate and complete.

It is my independent professional judgment and opinion that the remediation conducted at this site, as reflected in this submission to the Department, conforms to, and is consistent with, the remediation requirements in N.J.S.A. 58:10C-14.

My conduct and decisions in this matter were made upon the exercise of reasonable care and diligence, and by applying the knowledge and skill ordinarily exercised by licensed site remediation professionals practicing in good standing, in accordance with N.J.S.A. 58:10C-16, in the State of New Jersey at the time I performed these professional services.

I am aware pursuant to N.J.S.A. 58:10C-17 that for purposely, knowingly or recklessly submitting false statement, representation or certification in any document or information submitted to the board or Department, etc., that there are significant civil, administrative and criminal penalties, including license revocation or suspension, fines and being punished by imprisonment for conviction of a crime of the third degree.

LSRP Signature: _____ Date: _____

LSRP Name/Title: _____ **No Changes Since Last Submittal** ☐

Company Name: _____

Completed forms should be sent to the municipal clerk, designate health department, and:

Bureau of Case Assignment & Initial Notice
Site Remediation Program
NJ Department of Environmental Protection
401-05H
PO Box 420
Trenton, NJ 08625-0420

Site 153 Former Morris Canal Site
Land Use Table
Receptor Evaluation
Jersey City, New Jersey

Sensitive Properties Within 200 Feet of Site				
Block	**Lot**	**Property Location**	**Facility Name/Owner**	**Property Class**
26102	7	Multiple locations	SOCIETY HILL AT JERSEY CITY I CONDO	Exempt Misc./Residential
Other Properties Within 200 Feet of Site				
Block	**Lot**	**Property Location**	**Facility Name/Owner**	**Property Class**
21901	4	HACK. R. & STATE HWY	TRENK, PAUL	Vacant Land
21901	5	501 ROUTE 440	BAYFRONT REDEVELOPMENT,%T.REUTERS	Commercial
21901	5	501 ROUTE 440	BAYFRONT REDEVLPMT.,LLC%T.REUTERS	Commercial
21901	5	501 ROUTE 440	JERSEY CITY REDEVELOPMNET AGENCY	Exempt Public
21901	6	465 ROUTE 440	BAYFRONT REDEVLPMT LLC,%THOMSON REU	Vacant Land
21901	7	445 ROUTE 440	425/445 ROUTE 440 PROP.%THOMSON REU	Commercial
21901	8	425 ROUTE 440	425/445 ROUTE 440 PROP.%THOMSON REU	Commercial
21901	10	525 ROUTE 440	BAYFRONT REDEVELOPMENT %THOMSOM REU	Vacent Land
21901	10	525 ROUTE 440	JERSEY CITY REDEVELOPMENT AGENCY	Exempt Public
21902	1	460 DANFORTH AVE.	425/445 ROUTE 440 PROP.,LLC.%T.REUT	Vacant Land
21902	2	520 ROUTE 440	NEW JERSEY CITY UNIVERSTY	Public University
21902	13	ROUTE 440 STATE HWY	NEW JERSEY CITY UNIVERSITY	Public University
21902	14	500 ROUTE 440	NEW JERSEY CITY UNIVERSITY	Public University
22001	4	540 ROUTE 440	CIASULLI, ROBERT % ANTON SEMPRIVIVO	Commercial
24601	9	28 KELLOGG ST.	BAYFRONT REDEVELOPMENT %THOMSON REU	Vacant Land
24602	1	405 ROUTE 440	LEONTARAKIS JC-440 REAL ESTATE, LLC	Commercial
26101	1	440 ROUTE 440	JERSEY CITY FIELDS, L.L.C	Commercial
26101	3	107-111 WEST SIDE AVE.	EDEN WOOD REALTY	Industrial
26101	7	432 DANFORTH AVE.	DANFORTH REALTY, LLC % SINGH, H.	Commercial
26101	8	430 DANFORTH AVE.	MON-WEST REALTY CO.,INC.	Commerical
26101	8	430 DANFORTH AVE.	MON-WEST REALTY CO.,INC.	Industrial
26101	9	320 ROUTE 440	REGNAL REALTY CO. % LANGER TRANS	Industrial
26102	2	401 ROUTE 440	DELCO-LEVCO VENTURE	Commercial
26102	3	381 ROUTE 440	PALS-MALS VENT C/O K-MART CORP	Commercial
26102	4	321 ROUTE 440	T D 1993 PARTNERSHIP, L.P. %STAPLES	Commercial
26102	5	DROYERS POINTE	N.J. DEPT. OF TRANSPORTATION	Exempt Public
26703	20			
26704	1	431 DANFORTH AVE.	SHU LEE INC.	Commerical

Legend

- Site Boundary
- 200 ft Site Radius
- Parcel Boundary
  - Parcel Label: 2048 (Block) / 10.A (Lot)
- Non-Sensitive Land Use
- Sensitive Land Use (Residential)

Source:

Parcels of Hudson County, New Jersey State Plane NAD83, published by Hudson County Department of Planning, Jersey City, NJ.

Tax Maps of Jersey City, Hudson County, T&M Associates; Middletown, New Jersey State of New Jersey Division of Taxation 2010 MOD-IV data base.

New Jersey Public, Non-public, and Charter School point locations, NJ State Plane NAD83 published by NJ Office of Information Technology (NJOIT), Office of Geographic Information Systems (OGIS), Trenton, NJ. Licensed Child Care Centers in NJ provided by State of New Jersey Department of Children and Families.

Aerial Imagery Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community.

300 0 300

Scale In Feet

Path: P:\GIS\Projects\Honeywell\Study Area 5\Site 153 - Former Morris Canal\20140929 - Receptor Evaluation\20140929 - Receptor Evaluation.mxd

Project Number:
3480130371

Prepared/Date:
WSL 09/30/2014

Checked/Date:
JJH 12/8/2014

amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

Site 153 Former Morris Canal Site
Current Land Use Map
Receptor Evaluation
Jersey City, New Jersey

Path: P:\GIS\Projects\Honeywell\Study Area 5\Site 153 - Former Morris Canal\20140929 - Receptor Evaluation\20141205 - Planned Future Site Uses and Off-site Use.mxd

Legend

- Site Boundary
- 200 ft Site Radius
- Parcel Boundary

Parcel Label: 2048 (Block) / 10.A (Lot)

Redevelopment Plan Area

- Highway Commercial
- NJCU West Campus

(NJCU West Campus Development Plan includes academic facilities, student housing, mixed use retail/residential. The portion of NJCU next to Rt. 440 is designated for commercial/retail.)

- Redevelopment Plan Area (Bayfront I)
- Redevelopment Plan Area (Droyer's Point)
- Redevelopment Plan Area (Westside Avenue)
- Waterfront Planned Development

Source:

Parcels of Hudson County, New Jersey State Plane NAD83, published by Hudson County Department of Planning, Jersey City, NJ.

Tax Maps of Jersey City, Hudson County, T&M Associates; Middletown, New Jersey
State of New Jersey Division of Taxation 2010 MOD-IV data base.

Jersey City Zoning Map; Jersey City Division of City Planning in New Jersey; April 11, 2001.

Aerial Imagery Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community.

300 0 300

Scale In Feet

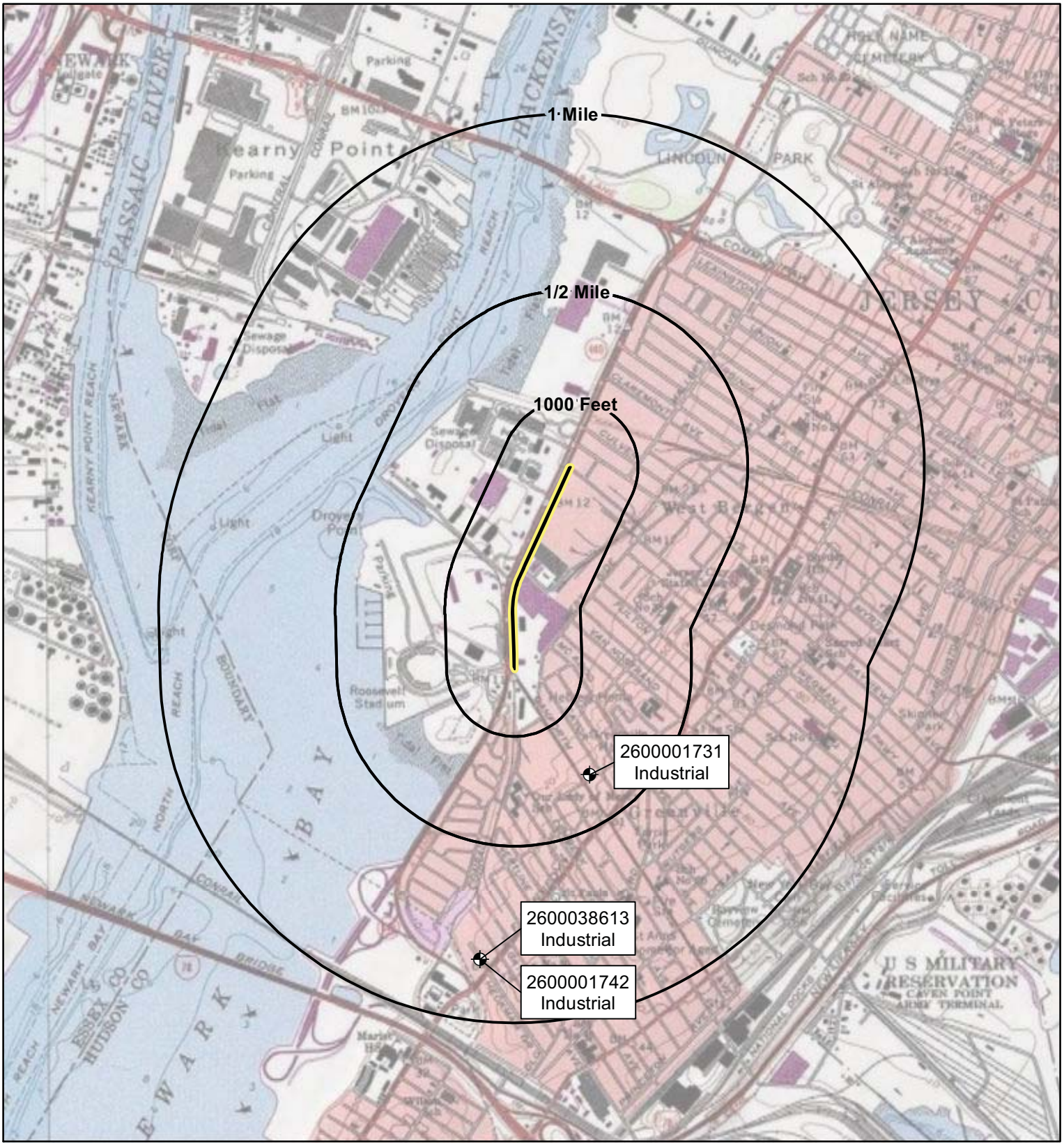
Project Number: 3480130371

Prepared/Date: WSL 12/05/2014

Checked/Date: JJH 12/08/2014

amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

Site 153 Former Morris Canal Site
Planned Future Land Use Map
Receptor Evaluation
Jersey City, New Jersey



Legend

- Well Location
  - Well Permit Number
  - Well Use
- Site Boundary
- Buffer Line

N

2,000 1,000 0 2,000

Scale In Feet

Service Layer Credits: Copyright: © 2013 National Geographic Society

amec

ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

Well Search Map

Study Area 5 - Site 153
Jersey City, New Jersey

PROJ. NO.	3480130371		12/15/2014	REV.
DWN. BY.	WSL	CHKD BY.	JJH	

New Jersey Department of Environmental Protection
Site Remediation Program

REMEDIAL INVESTIGATION REPORT FORM

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Hudson County Chromate Site 153 (COPR)

List all AKAs: Former Morris Canal

Street Address: Along Route 440 Northbound shoulder, between Carbon Place and Danforth Avenue

Municipality: Jersey City (Township, Borough or City)

County: Hudson Zip Code: 07305

Program Interest (PI) Number(s): G000008767

Case Tracking Number(s) for this submission: RPC930001

Date Remediation Initiated Pursuant to N.J.A.C. 7:26C-2: 06/17/1993

State Plane Coordinates for a central location at the site: Easting: 603480 Northing: 684304

Municipal Block(s) and Lot(s):

Block #	21902	Lot #	1	Block #		Lot #	
Block #	26704	Lot #	5	Block #		Lot #	
Block #		Lot #		Block #		Lot #	
Block #		Lot #		Block #		Lot #	

SECTION B. SUBMISSION STATUS

1. Indicate how the Electronic Data Deliverable (EDD) for this submittal is being provided to the NJDEP:
   - ☐ Via Email at srpedd@dep.state.nj.us (attach NJDEP confirmation email); or
   - ☒ CD (attach to this submittal)
2. Is a Classification Exception Area (CEA) Proposal included with this submission?..... ☐ Yes ☒ No
3. Complete the following Submittal and Permit Status Table:

	N/A	Included in this Submission	Previously Submitted	Date Of Submission	Date of Revised Submission	Date of Previous NJDEP Approval	Date of Document Withdrawal
Alternative Soil Remediation Standard and/or Screening level Application Form	☒	☐	☐				
Case Inventory Document		☒					
Discharge to Ground Water Permit by Rule Authorization Request	☒	☐	☐				
IEC Engineered System Response Action Report	☒	☐	☐				
Immediate Environmental Concern Report	☒	☐	☐				
LNAPL Interim Remedial Measure Report	☒	☐	☐				
Preliminary Assessment Report	☐	☒	☐				
Public Notification	☐	☐	☒	08/20/2009			
Receptor Evaluation	☐	☒	☐				
Remedial Action Report	☐	☒	☐				
Remedial Action Work Plan	☐	☒	☐				

Remedial Investigation Report	☐	☒	☐				
Response Action Outcome	☒	☐	☐				
Site Investigation Report	☐	☒	☐				
Technical Impracticability Determination	☒	☐	☐				
Vapor Concern Mitigation Report	☒	☐	☐				
Permit Application – list:	☒						
		☐	☐				
		☐	☐				
		☐	☐				
		☐	☐				
Radionuclide Remedial Investigation Workplan	☒	☐	☐				
Radionuclide Remedial Investigation Report	☒	☐	☐				
Radionuclide Remedial Action Workplan	☒	☐	☐				
Radionuclide Remedial Action Report	☒	☐	☐				

SECTION C. SITE USE

Current Site Use *(check all that apply)*

- ☐ Industrial
- ☐ Residential
- ☐ Commercial
- ☐ School or child care
- ☐ Agricultural
- ☐ Park or recreational use
- ☐ Vacant
- ☐ Government
- ☒ Other utility easement

Intended Future Site Use *(check all that apply)*

- ☐ Industrial
- ☐ Residential
- ☐ Commercial
- ☐ School or child care
- ☐ Park or recreational use
- ☐ Vacant
- ☐ Government
- ☐ Future site use unknown
- ☒ Other utility easement

SECTION D. CASE TYPE: *(check all that apply)*

- ☒ Administrative Consent Order (ACO)
- ☐ Brownfield Development Area (BDA)
- ☐ Child Care Facility
- ☒ Chrome Site (Chromate chemical production waste)
- ☐ Coal Gas
- ☐ Due Diligence with RAO
- ☐ Hazardous Discharge Remediation Fund (HDSRF) Grant/Loan
- ☐ ISRA
- ☐ Landfill (SRP subject only)
- ☐ Regulated Underground Storage Tank (UST)
- ☐ Remediation Agreement (RA)
- ☐ School Development Authority (SDA)
- ☐ School facility
- ☐ Spill Act Defense – Government Entity
- ☐ Spill Act Discharge
- ☐ UST Grant/Loan
- ☐ Other: _____

Federal Case (check all that apply)

☐ RCRA GPRA 2020 ☐ CERCLA/NPL ☐ USDOD ☐ USDOE

1. Is the party conducting remediation a government entity? ..... ☐ Yes ☒ No

If "Yes," check one: ☐ Federal ☐ State ☐ Municipal ☐ County

SECTION E. PUBLIC FUNDS

Did the remediation utilize public funds? ..... ☐ Yes ☒ No

If "Yes," check applicable:

- ☐ UST Grant
- ☐ HDSRF Grant
- ☐ Spill Fund
- ☐ UST Loan
- ☐ HDSRF Loan
- ☐ Schools Development Authority
- ☐ Brownfield Reimbursement Program
- ☐ Landfill Reimbursement Program
- ☐ Environmental Infrastructure Trust

SECTION F. SCOPE OF THE REMEDIAL INVESTIGATION REPORT

1. Does the Remedial Investigation address:
   - ☐ Area(s) of Concern (AOCs) Only
   - ☒ Entire Site (based on a completed and submitted Preliminary Assessment/Site Investigation)
2. Total number of contaminated AOCs associated with the case: 2
3. Total number of contaminated AOCs addressed in this submittal: 2
4. Is the Remedial Investigation complete for the contaminated AOCs addressed in this submittal? ☒ Yes ☐ No
5. Is the Remedial Investigation complete for all AOCs associated with this case? ☒ Yes ☐ No

   If "Yes," provide date: 12/31/2014

When answering the remaining questions on this form consider only the AOCs addressed in this submission.

SECTION G. GENERAL

1. Are you proposing an alternative remediation standard pursuant to N.J.A.C. 7:26D-7.4, alternate vapor intrusion screening level, or ecological site specific goal? ☐ Yes ☒ No

   If "Yes," attach the Alternative Remediation Standard and/or Screening Level Application Form as an addendum.
2. Was a site-specific screening level developed for the evaluation of the VI pathway? ☐ Yes ☒ No
3. Has/will the remediation vary from the Technical Rules? ☐ Yes ☒ No

   If "Yes." provide the citation(s) from which the remediation has/will vary and the page(s) in the attached document where the rationale for the variance is provided.

   N.J.A.C. 7:26E- _____ Page _____

   N.J.A.C. 7:26E- _____ Page _____

   N.J.A.C. 7:26E- _____ Page _____
4. Were the laboratory reporting minimum detection limits below applicable remediation standards/ screening levels required for the site? ☒ Yes ☐ No
5. Have past deficiencies/notice of deficiencies been addressed in this submittal? ☒ Yes ☐ No

SECTION H. SITE CONDITIONS

1. Is any radiological contamination currently present at the AOCs addressed in this submission? ☐ Yes ☒ No
2. At any time, did any of the AOCs addressed in this submission contain Ordnance and Explosives/ Unexploded Ordnance (OE/UXO)? ☐ Yes ☒ No
3. Is free product free product present? ☐ Yes ☒ No
4. Has dioxin been detected at levels above NJDEP's interim direct contact soil screening level of 50 ppt dioxin TEQ (TCDD Toxicity Equivalence Quotient) in any AOCs addressed in this submission? ☐ Yes ☒ No
5. Have any of the following contaminants *ever* been detected in sediment above the ecological screening levels at the AOCs addressed in this submission? ☐ Yes ☐ No

   (Not applicable; sediment sampling was not conducted)

   If "Yes," check all that apply:

   ☐ Arsenic ☐ Dioxin ☐ Mercury ☐ PCBs ☐ Pesticides
6. Did contaminants from the AOCs addressed in this submission discharge to surface water? ☐ Yes ☒ No
7. Did contaminants from the AOCs addressed in this submission discharge to an Environmentally Sensitive Natural Resource (ESNR)? ☐ Yes ☒ No

8. Are any of the following conditions currently present? *(check all that apply)*

Ground water:

- ☒ Contaminated ground water in the overburden aquifer
- ☐ Contaminated ground water in a confined aquifer
- ☐ Contaminated ground water in the bedrock aquifer
- ☐ Contaminated ground water in multiple aquifer units
- ☐ Multiple distinct ground water plumes
- ☒ Contaminated ground water migrating off-site
- ☐ Natural background ground water contamination
- ☐ Contaminated ground water discharging to surface water or Environmentally Sensitive Natural Resource (ESNR)
- ☐ Residual or free product
- ☐ Radionuclides

Soil:

- ☒ On-site discharge(s) impacting soil off-site
- ☒ Chromate Chemical Production Waste/COPR
- ☐ Munitions and explosives of concern
- ☒ Contaminated soil in the saturated zone
- ☐ Historic pesticide impacts to soil
- ☐ Residual or free product
- ☐ Radionuclides
- ☒ Historic Fill
- ☐ Natural background only above Impact to Ground Water Cleanup Criteria
- ☐ Natural background above Direct Contact Remediation Standards
- ☐ Soil contamination in an ESNR

SECTION I. APPLICABLE REMEDIATION STANDARDS

1. Were Default Remediation Standards used for all contaminants? ☒ Yes ☐ No
   (If "Yes," check all that apply) (NJDEP soil policy criteria for hexavalent chromium)
   - ☐ Direct Contact
   - ☐ Impact to Ground Water Soil Screening Levels
   - ☐ Ecological Screening Levels

2. Has compliance averaging been utilized to determine compliance with the Soil Remediation Standards? ☐ Yes ☒ No
   If "Yes," check all that apply:

	Compliance Averaging Method Utilized			
Pathway	Arithmetic Mean	95 Percent UCL	Spatially Weighted Average	75 Percent/ 10X Procedure
☐ Ingestion-Dermal Pathway	☐	☐	☐	☐
☐ Inhalation Pathway	☐	☐	☐	☐
☐ Impact to Ground Water Pathway	☐	☐	☐	☐

3. Has a compliance option been utilized to determine compliance with the Impact to Ground Water Pathway? (If "Yes," check all that apply) ☐ Yes ☒ No
   - ☐ Immobile Compounds
   - ☐ Data evaluation for metals and semi-volatiles
   - ☐ Data evaluation for volatile organics derived from discharges of petroleum mixtures

4. Was an interim standard used for a contaminant where a standard does not exist? (NJDEP soil policy criteria for hexavalent chromium) ☒ Yes ☐ No
5. Were Alternate Remediation Standards used for the Ingestion/Dermal Pathway? ☐ Yes ☒ No
6. Were Alternate Remediation Standards used for the Inhalation Pathway? ☐ Yes ☒ No
7. Were Site Specific Standards used for the Impact to Ground Water Pathway? ☐ Yes ☒ No
   If "Yes," check all that apply:
   - ☐ Soil-Water Partitioning Equation ☐ SPLP ☐ Sesoil ☐ Sesoil/AT123D
   - ☐ DAF Modification
8. Were Site Specific Ecological Remediation Goals used? ☐ Yes ☒ No
9. What is the ground water classification for this site as per N.J.A.C. 7:9C? (check all that apply)
   - ☐ Class I-A
   - ☐ Class I-PL Pinelands Protection Area
   - ☐ Class I-PL Pinelands Preservation Area
   - ☒ Class II-A
   - ☐ Class III-A
   - ☐ Class III-B

SECTION J. BACKGROUND CONDITIONS

Did the RI demonstrate via a background investigation, outside the influence of on-site AOCs **and** operational areas, that:

1. All or any part of the ground water contamination is migrating onto this site per N.J.A.C. 7:26E-3.9? ☐ Yes ☐ No ☒ NA
2. Soil contamination is naturally occurring per N.J.A.C. 7:26E-3.8 ☐ Yes ☐ No ☒ NA

SECTION K. HISTORIC FILL

1. Is Historic Fill present at the site? ☒ Yes ☐ No

   If "Yes":

   a). What is the evidence that Historic Fill is present?

   Field observations from soil boring logs and NJDEP mapped area of historic fill

   b). Are any other AOCs co-located within the Historic Fill? ☒ Yes ☐ No

   If "Yes," have the same contaminant types (e.g. lead arsenic, etc.) characterized as being present in the Historic Fill been sampled for as contaminants of concern at these co-located AOCs? ☒ Yes ☐ No

2. Was the historic fill characterized pursuant to N.J.A.C. 7:26E-4.7 and the NJDEP Historic Fill Material Technical Guidance Document? ☒ Yes ☐ No

SECTION L. GROUND WATER TRIGGER

1. Was a ground water investigation conducted at all AOCs where a ground water investigation was triggered pursuant to N.J.A.C. 7:26E-3.5 and 4.3? ☒ Yes ☐ No ☐ NA
2. Is contamination in soils fully delineated? ☒ Yes ☐ No

SECTION M. GROUND WATER REMEDIAL INVESTIGATION INFORMATION

1. Are contaminants present with a specific gravity less than that of water? ☐ Yes ☒ No
   a. If "Yes," were any monitor wells installed in unconfined aquifers in which the water table is higher than the top of the well screen? ☐ Yes ☐ No

   If "Yes" to 1a, identify the affected wells. _____
2. Are contaminants present with a specific gravity greater than that of water? ☐ Yes ☒ No
   a. If "Yes," were multiple depth discrete ground water samples collected in a vertical profile at each ground water sampling location where dense contaminants were suspected? ☐ Yes ☐ No
3. Is ground water in the bedrock aquifer contaminated? ☐ Yes ☒ No

   If "Yes," answer questions 3a and 3b.

   a. Were bedrock cores collected? ☐ Yes ☐ No
   b. Were geophysical logging methods conducted to characterize the bedrock aquifer in accordance with the NJDEP Ground Water Technical Guidance (3.4.2.2)? ☐ Yes ☐ No
4. Is contamination in ground water fully delineated? ☒ Yes ☐ No

SECTION N. ECOLOGICAL RECEPTORS

1. Have soil, sediment, and/or surface water data been collected from Environmentally Sensitive Natural Resources (ESNR)? ☐ Yes ☐ No ☒ NA
   a. If "Yes," do contaminant concentrations at the ESNR exceed ecological screening criteria or the aquatic chronic NJSWQS [N.J.A.C.7:9B]? ☐ Yes ☐ No
   b. If "Yes," have soil and sediment data been collected from both surface and subsurface intervals in the ESNR? ☐ Yes ☐ No
   c. If "No" for 1b, provide explanation _____

2. Have contaminant migration pathways from the site/AOC to the ESNR been identified? ☐ Yes ☒ No

3. Do the results of the Ecological Evaluation require a remedial investigation of ecological receptors? ☐ Yes ☒ No

   If "No," provide explanation No ENSRs at the site

4. Has an Ecological Risk Assessment been conducted [N.J.A.C.7:26E-4.8]? ☐ Yes ☒ No

5. Is remediation required in an ESNR? ☐ Yes ☒ No

SECTION O. MISCELLANEOUS

1. Were any regulated USTs identified during the course of the RI that were not previously known? ☐ Yes ☒ No

   If "Yes," list tank size, contents and registration number(s):

   a. If "Yes," to item P.1. above and if these USTs were Federally Regulated, was the source/cause of release identified on a Confirmed Discharge Notification form? ☐ Yes ☐ No

      If "No," complete and submit a revised Confirmed Discharge Notification form.

2. Were additional Areas of Concern identified during the RI? ☐ Yes ☒ No

   If "Yes," identify AOC(s):

3. Identify Remedial Measures (RMs) conducted during the RI (check all that apply):

   ☐ Soil excavation
   ☐ Potable water supply treatment or replacement
   ☐ Hydraulic containment of source area
   ☐ Soil vapor extraction
   ☐ Enhanced fluid recovery (EFR)
   ☐ Other(s), specify:
   ☐ UST closure
   ☐ Free product recovery
   ☐ Vapor intrusion mitigation
   ☐ No RMs were conducted during the RI

4. Has clean fill has been brought onto the site? (see RAR section of enclosed report) ☒ Yes ☐ No

   If "Yes," has it been analyzed? ☒ Yes ☐ No

5. Has new information (material facts, data or other information) been generated during the RI that corrects or contradicts information, or changes conclusions from, previously submitted reports or information? ☒ Yes ☐ No

   If "Yes," explain: Area of chromium-impacted soils delineation revised since initial Draft RI Report (1999)

SECTION P. LABORATORY DATA

1. Were all data submitted in the appropriate full and/or reduced formats according to the deliverables defined in N.J.A.C. 7:26E-2? ☒ Yes ☐ No

2. Do all data submitted meet the quality assurance/quality control (QA/QC) requirements incorporated by reference in N.J.A.C. 7:26E-2 for:

   sampling ☒ Yes ☐ No
   analysis ☒ Yes ☐ No

3. How was it determined that the data complied with the QA/QC requirements?

   ☐ Laboratory non-conformance summary/narrative
   ☐ Laboratory correspondence
   ☐ LSRP review
   ☒ Independent contractor review
   ☐ Other:

4. Has any data been qualified and used? ☒ Yes ☐ No

5. Has any data been rejected and used? ☐ Yes ☒ No

6. Provide the page number for the "Reliability of Data" section of the report: 40

SECTION Q. PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION AND CERTIFICATION

Full Legal Name of the Person Responsible for Conducting the Remediation: Honeywell

Representative First Name: John Representative Last Name: Morris

Title: Remediation Director

Phone Number: (973) 455-4003 Ext: Fax:

Mailing Address: 101 Columbia Road

City/Town: Morristown State: New Jersey Zip Code: 07962

Email Address: John.Morris@honeywell.com

This certification shall be signed by the person responsible for conducting the remediation who is submitting this notification in accordance with Administrative Requirements for the Remediation of Contaminated Sites rule at N.J.A.C. 7:26C-1.5(a).

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein, including all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, to the best of my knowledge, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties.

Signature: John J. Morris Date: 12/12/14

Name/Title: John Morris/Remediation Director

No changes to contact information since last submittal ☒

SECTION R. LICENSED SITE REMEDIATION PROFESSIONAL INFORMATION AND STATEMENT

LSRP ID Number: Not applicable

First Name: _____ Last Name: _____

Phone Number: _____ Ext: _____ Fax: _____

Mailing Address: _____

City/Town: _____ State: _____ Zip Code: _____

Email Address: _____

This statement shall be signed by the LSRP who is submitting this notification in accordance with SRRA Section 16 d. and Section 30 b.2.

I certify that I am a Licensed Site Remediation Professional authorized pursuant to N.J.S.A. 58:10C to conduct business in New Jersey. As the Licensed Site Remediation Professional of record for this remediation, I:

[SELECT ONE OR BOTH OF THE FOLLOWING AS APPLICABLE]:

☐ *directly oversaw and supervised all of the referenced remediation, and\or*

☐ *personally reviewed and accepted all of the referenced remediation presented herein.*

I believe that the information contained herein, and including all attached documents, is true, accurate and complete.

It is my independent professional judgment and opinion that the remediation conducted at this site, as reflected in this submission to the Department, conforms to, and is consistent with, the remediation requirements in N.J.S.A. 58:10C-14.

My conduct and decisions in this matter were made upon the exercise of reasonable care and diligence, and by applying the knowledge and skill ordinarily exercised by licensed site remediation professionals practicing in good standing, in accordance with N.J.S.A. 58:10C-16, in the State of New Jersey at the time I performed these professional services.

I am aware pursuant to N.J.S.A. 58:10C-17 that for purposely, knowingly or recklessly submitting false statement, representation or certification in any document or information submitted to the board or Department, etc., that there are significant civil, administrative and criminal penalties, including license revocation or suspension, fines and being punished by imprisonment for conviction of a crime of the third degree.

LSRP Signature: _____ Date: _____

LSRP Name/Title: _____

Company Name: _____

No changes to contact information since last submittal ☐

Completed forms should be sent to:

Bureau of Case Assignment & Initial Notice
Site Remediation Program
NJ Department of Environmental Protection
401-05H
PO Box 420
Trenton, NJ 08625-0420

New Jersey Department of Environmental Protection
Site Remediation Program

REMEDIAL ACTION WORKPLAN FORM

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Hudson County Chromate Site 153 (COPR)

List all AKAs: Former Morris Canal

Street Address: Along Route 440 Northbound shoulder, between Carbon Place and Danforth Avenue

Municipality: Jersey City (Township, Borough or City)

County: Hudson Zip Code: 07305

Program Interest (PI) Number(s): G000008767

Case Tracking Number(s) for this submission: RPC930001

Date Remediation Initiated Pursuant to N.J.A.C. 7:26C-2: 06/17/1993

State Plane Coordinates for a central location at the site: Easting: 603480 Northing: 684304

Municipal Block(s) and Lot(s):

Block #	21902	Lot #	1	Block #		Lot #	
Block #	26704	Lot #	5	Block #		Lot #	
Block #		Lot #		Block #		Lot #	
Block #		Lot #		Block #		Lot #	

SECTION B. SUBMISSION STATUS

1. Is this submission a proposal to obtain NJDEP pre-approval for using alternative fill in excess of the volume required for a remedial action? ☐ Yes ☒ No

   If "Yes," has notification been provided to:

   - ☐ Each owner of real property and the tenants of those properties, located within 200 feet of the site boundary;
   - ☐ The mayor of each municipality which the site is located;
   - ☐ The county designated solid waste coordinator(s);
   - ☐ The municipal clerk of each municipality in which the site is located; and
   - ☐ The county health department(s) and local health agency(ies).

2. Indicate how the Electronic Data Deliverable (EDD) for this submission is being provided to the NJDEP:

   - ☐ Via Email at srpedd@dep.state.nj.us (attach NJDEP confirmation email)
   - ☒ CD (attach to this submission)
   - ☐ Not Applicable – No EDD

3. Is a Discharge to Ground Water Permit by Rule Authorization Request required? ☐ Yes ☒ No

   If "Yes," indicate below if the permit application is attached to this submission or was previously submitted.

   - ☐ Permit Application is attached to this submission
   - ☐ Permit Application submitted to the NJDEP on this date: _____

4. Complete the following Submission and Permit Status Table:

	N/A	Included in This Submission	Previously Submitted	Date of Submission	Date of Revised Submission	Date of Previous NJDEP Approval	Date of Document Withdrawal
Alternative Soil Remediation Standard and/or Screening level Application Form	☒	☐	☐				
Case Inventory Document		☒					

Discharge to Ground Water Permit by Rule Authorization Request	☒	☐	☐				
IEC Engineered System Response Action Report	☒	☐	☐				
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LNAPL Interim Remedial Measure Report	☒	☐	☐				
Preliminary Assessment Report	☐	☒	☐				
Public Notification	☐	☐	☒	08/20/2009			
Receptor Evaluation	☐	☒	☐				
Remedial Action Report	☐	☒	☐				
Remedial Action Work Plan	☐	☒	☐				
Remedial Investigation Report	☐	☒	☐				
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Site Investigation Report	☐	☒	☐				
Technical Impracticability Determination	☒	☐	☐				
Vapor Concern Mitigation Report	☒	☐	☐				
Permit Application – list:	☒						
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SECTION C. SITE USE

Current Site Use *(check all that apply)*

- ☐ Industrial
- ☐ Residential
- ☐ Commercial
- ☐ School or child care
- ☐ Agricultural
- ☐ Park or recreational use
- ☐ Vacant
- ☐ Government
- ☒ Other: utility easement

Intended Future Site Use *(check all that apply)*

- ☐ Industrial
- ☐ Residential
- ☐ Commercial
- ☐ School or child care
- ☐ Park or recreational use
- ☐ Vacant
- ☐ Government
- ☐ Future site use unknown
- ☒ Other: utility easement

SECTION D. CASE TYPE: *(check all that apply)*

- ☒ Administrative Consent Order (ACO)
- ☐ Brownfield Development Area (BDA)
- ☐ Child Care Facility
- ☒ Chrome Site (Chromate chemical production waste)
- ☐ Coal Gas
- ☐ Due Diligence with RAO
- ☐ Hazardous Discharge Remediation Fund (HDSRF) Grant/Loan
- ☐ ISRA
- ☐ Landfill (SRP subject only)
- ☐ Regulated Underground Storage Tank (UST)
- ☐ Remediation Agreement (RA)/ Remediation Certification
- ☐ School Development Authority (SDA)
- ☐ School facility
- ☐ Spill Act Defense – Government Entity
- ☐ Spill Act Discharge
- ☐ UST Grant/Loan
- ☐ Other: _____

Federal Case *(check all that apply)*

☐ RCRA GPRA 2020 ☐ CERCLA/NPL ☐ USDOD ☐ USDOE

1. Is the party conducting remediation a government entity? ..... ☐ Yes ☒ No

If "Yes," check one: ☐ Federal ☐ State ☐ Municipal ☐ County

SECTION E. PUBLIC FUNDS

Did the remediation utilize public funds? ☐ Yes ☒ No

If "Yes," check applicable:

☐ UST Grant ☐ UST Loan ☐ Brownfield Reimbursement Program
☐ HDSRF Grant ☐ HDSRF Loan ☐ Landfill Reimbursement Program
☐ Spill Fund ☐ Schools Development Authority ☐ Environmental Infrastructure Trust

SECTION F. SCOPE OF REMEDIAL ACTION WORKPLAN

1. Does the RAW address:
   ☐ Area(s) of Concern (AOCs) Only
   ☒ Entire Site (Based on a completed and submitted Preliminary Assessment/Site Investigation)
2. Total number of contaminated AOCs associated with the case: 2
3. Total number of contaminated AOCs addressed in this submission: 2

When answering the remaining questions on this form consider only the AOCs addressed in this submission.

SECTION G. GENERAL

1. Is an unrestricted use or a presumptive remedy required? ☐ Yes ☒ No
   If "Yes," is an unrestricted use or a presumptive remedy being proposed? ☐ Yes ☐ No
2. Is the proposed remedial action an alternative remedy pursuant to N.J.A.C. 7:26E-5.3? ☐ Yes ☒ No
   If "Yes," specify the section/page(s) of the RAW where the alternative remedy is proposed:

   _____
3. Has/will the remediation vary from the Technical Rules? ☐ Yes ☒ No
   If "Yes." provide the citation(s) from which the remediation has/will vary and the page(s) in the attached document where the rationale for the variance is provided.

   N.J.A.C. 7:26E- _____ Page _____

   N.J.A.C. 7:26E- _____ Page _____

   N.J.A.C. 7:26E- _____ Page _____
4. Will the proposed remedial action render the property unusable for future redevelopment or for recreational use (N.J.A.C. 7:26C-6.4(b))? ☐ Yes ☒ No

SECTION H. SITE CONDITIONS

1. Is any radiological contamination currently present at the AOCs addressed in this submission? ☐ Yes ☒ No
2. At any time, did any of the AOCs addressed in this submission contain Ordnance and Explosives/ Unexploded Ordnance (OE/UXO)? ☐ Yes ☒ No
3. Does the proposed remedial action involve containment of free product? ☐ Yes ☒ No
4. Have any of the following contaminants *ever* been detected in sediment above the ecological screening levels at the AOCs addressed in this submission? ☐ Yes ☐ No

   If "yes," check all that apply: (N/A No sediment present onsite)

   ☐ Arsenic ☐ Dioxin ☐ Mercury ☐ PCBs ☐ Pesticides

5. Are any of the following conditions currently present for the AOCs addressed in this submission: *(check all that apply)*

Ground water:

- ☒ Contaminated ground water in the overburden aquifer
- ☐ Contaminated ground water in a confined aquifer
- ☐ Contaminated ground water in the bedrock aquifer
- ☐ Contaminated ground water in multiple aquifer units
- ☐ Multiple distinct ground water plumes
- ☐ Contaminated ground water migrating off-site
- ☐ Natural background ground water contamination
- ☐ Contaminated ground water discharging to surface water or Environmentally Sensitive Natural Resource (ESNR)
- ☐ Residual or free product
- ☐ Radionuclides

Soil:

- ☒ On-site discharge(s) impacting soil off-site
- ☒ Chromate Chemical Production Waste/COPR
- ☐ Munitions and explosives of concern
- ☒ Contaminated soil in the saturated zone
- ☐ Historic pesticide impacts to soil
- ☐ Residual or free product
- ☐ Radionuclides
- ☒ Historic Fill
- ☐ Natural background only above Impact to Ground Water Cleanup Criteria
- ☐ Natural background above Direct Contact Remediation Standards
- ☐ Soil contamination in an ESNR

SECTION I. ALTERNATIVE AND CLEAN FILL USE

1. Will alternative fill be used? ☐ Yes ☒ No
2. Will clean fill be used? ☒ Yes ☐ No
3. Will material be sent off-site for use as alternative and/or clean fill at an Site Remediation Program (SRP) site? ☐ Yes ☒ No

   If "Yes," specify the section/page in the RAW where it states the SRP site receiving this alternative and/or clean fill: _____
4. Will material be sent off-site for use as alternative and/or clean fill at a non-SRP site? ☐ Yes ☒ No

   If "Yes," specify the section/page in the RAW where it states the non-SRP site receiving this alternative and/or clean fill: _____
5. Specify the section/pages where the Fill Use Plan pursuant to N.J.A.C. 7:26E-5.2(g) can be found:

   Section 6.5 of RIR/RAWP/RAR

SECTION J. REMEDIAL ACTION WORKPLAN INFORMATION

Permit Information

1. Does the site contain any land use features (e.g. wetlands, flood hazard area, etc.) that have been or will be impacted by remedial activities? ☐ Yes ☒ No
2. Are land use permits required prior to the implementation of the remedial action? ☐ Yes ☒ No

   If "Yes," specify the section/page(s) in the RAW where land use permits are discussed:

   _____
3. Are any federal, state, or local permits, permit modifications, or certifications, other than those listed in question 2 above, needed for this remedial action? ☒ Yes ☐ No

   If "Yes," specify the section/page(s) in the RAW where any federal, state, or local permits, permit modifications, or certifications are discussed:

   Section 6.4 of RIR/RAWP/RAR

Soils

4. Is a soil remedial action required? ☒ Yes ☐ No

   If "No," skip to **Ground Water**

5. Check each type of remediation being proposed for soils:

☒ Excavation	☐ Soil Washing
☒ Capping/other Engineering Control	☐ Bioremediation
☒ Institutional Control	☐ Soil Vapor Extraction
☐ Chemical Oxidation	☐ Chemical Reduction
☐ Thermal desorption	☐ Other (specify): _____

6. Does the proposed remedial action address all saturated zone source material? ☒ Yes ☐ No ☐ N/A

7. Is an engineering control proposed in this submission? ☒ Yes ☐ No

If "Yes," indicate the receptor(s) each engineering control is intended to protect. *(check all that apply)*

☒ Human ☐ Ecological ☐ Offsite Impacts

8. If a restricted use remedy is being proposed, has consent from all involved property owners been obtained? (See Attachment A for additional information) ☒ Yes ☐ No ☐ N/A

Ground Water

9. Is a ground water remedial action required? ☒ Yes ☐ No

If "No," skip to **Non-Aqueous Phase Liquid (NAPL)**

10. Check each type of remediation being proposed for ground water:

☐ Containment	☐ Hydraulic Control
☐ Multiple Phase Extraction System	☒ Monitored Natural Attenuation
☐ SVE/Air Sparging	☐ Chemical Oxidation
☐ Ozone Sparging	☐ Other (specify): _____
☐ Pump & Treat	

Non-Aqueous Phase Liquid (NAPL)

11. Does the proposed remediation include a remedial action for LNAPL or DNAPL? ☐ Yes ☒ No

If "Yes," check all that apply:

	Containment/Control	Removal	Other
LNAPL	☐	☐	☐
DNAPL	☐	☐	☐

If you checked "Other," specify the type of remediation proposed:

Environmentally Sensitive Natural Resource (ESNR)

12. Is a remedial action required for an ESNR? ☐ Yes ☒ No

If "No," skip to **Indoor Air**

13. Check each type of remediation being proposed for ESNR(s):

☐ Capping ☐ Excavation/Dredging ☐ Other (specify): _____

Indoor Air

14. Was a soil gas investigation required? ☐ Yes ☒ No

15. Are soil gas concentrations currently greater than10 times SGSLs? ☐ Yes ☐ No

16. Is a vapor intrusion engineering control/mitigation system required? ☐ Yes ☒ No

If "Yes," Check each type of mitigation being proposed for indoor air:

☐ Subsurface Depressurization System	
☐ HVAC Positive Pressure	☐ Subsurface Ventilation Systems
☐ Soil Vapor Extraction System	☐ Other (specify): _____

SECTION K. PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION AND CERTIFICATION

Full Legal Name of the Person Responsible for Conducting the Remediation: Honeywell

Representative First Name: John Representative Last Name: Morris

Title: Remediation Director

Phone Number: (973) 455-4003 Ext: Fax:

Mailing Address: 101 Columbia Road/SOL-4

City/Town: Morristown State: New Jersey Zip Code: 07962

Email Address: John.Morris@honeywell.com

This certification shall be signed by the person responsible for conducting the remediation who is submitting this notification in accordance with Administrative Requirements for the Remediation of Contaminated Sites rule at N.J.A.C. 7:26C-1.5(a).

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein, including all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, to the best of my knowledge, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties.

Signature: John J. Morris Date: 12/12/14

Name/Title: John Morris/Remediation Director

No changes to contact information since last submission ☒

SECTION L. LICENSED SITE REMEDIATION PROFESSIONAL INFORMATION AND STATEMENT

LSRP ID Number: Not applicable

First Name: _____ Last Name: _____

Phone Number: _____ Ext: _____ Fax: _____

Mailing Address: _____

City/Town: _____ State: _____ Zip Code: _____

Email Address: _____

This statement shall be signed by the LSRP who is submitting this notification in accordance with section 14 of P.L.2009 c.60 (N.J.S.A. 58:10C-14), and paragraphs (1) and (2) of subsection b. of section 30 of P.L.2009 c.60 (N.J.S.A. 58:10B=1.3b(1) and (2)).

I certify that I am a Licensed Site Remediation Professional authorized pursuant to N.J.S.A. 58:10C to conduct business in New Jersey. As the Licensed Site Remediation Professional of record for this remediation, I:

[SELECT ONE OR BOTH OF THE FOLLOWING AS APPLICABLE]:

☐ *directly oversaw and supervised all of the referenced remediation, and\or*

☐ *personally reviewed and accepted all of the referenced remediation presented herein.*

I believe that the information contained herein, and including all attached documents, is true, accurate and complete.

It is my independent professional judgment and opinion that the remediation conducted at this site, as reflected in this submission to the Department, conforms to, and is consistent with, the remediation requirements in N.J.S.A. 58:10C-14.

My conduct and decisions in this matter were made upon the exercise of reasonable care and diligence, and by applying the knowledge and skill ordinarily exercised by licensed site remediation professionals practicing in good standing, in accordance with N.J.S.A. 58:10C-16, in the State of New Jersey at the time I performed these professional services.

I am aware pursuant to N.J.S.A. 58:10C-17 that for purposely, knowingly or recklessly submitting false statement, representation or certification in any document or information submitted to the board or Department, etc., that there are significant civil, administrative and criminal penalties, including license revocation or suspension, fines and being punished by imprisonment for conviction of a crime of the third degree.

LSRP Signature: _____ Date: _____

LSRP Name/Title: _____

Company Name: _____

No changes to contact information since last submission ☐

Completed forms should be sent to:

Bureau of Case Assignment & Initial Notice
Site Remediation Program
NJ Department of Environmental Protection
401-05H
PO Box 420
Trenton, NJ 08625-0420

Attachment A

Hudson County Chromate Site 153 (COPR)
Jersey City, New Jersey
PI#G000008767

Remedial Action Work Plan Form

Section J. Remedial Action Work Plan Information - Soils

J.8. If a restricted use remedy is being proposed, has consent from all involved property owners been obtained?

Honeywell owns the property comprising the Site, thus property owner consent for restricted use at the Site property is not required. A deed notice was recorded on November 30, 2010. Remedial actions were documented in previous report submittals to the NJDEP and are discussed in the RAR section of the enclosed report. The appendix section includes a modified Deed Notice which reflects the completed remedial actions, current block and lot, and current NJDEP model deed notice format. Following NJDEP review of the enclosed report, the modified deed notice will be recorded and a Remedial Action Soil Permit application will be submitted.

The RAWP section of the enclosed report addresses proposed remedial actions on portions of adjacent offsite commercial properties and roadway right-of-way (ROW) areas, i.e., Route 440 shoulder area and portions of City of Jersey City street ROW areas. The proposed remedial actions include implementation of engineering and institutional controls, similar to remedial actions completed at the Morris Canal Site. Honeywell has shared the proposed remedial actions with the commercial property owners and NJDOT representatives, and is working with each of these entities to obtain concurrence on the remedial approaches, including implementation of institutional controls. For portions of City of Jersey City road ROW areas, proposed remedial actions are consistent with the sewer protocol which has been approved by the City of Jersey City and include the use of existing road pavement as engineering control in conjunction with an institutional control (deed notice). Honeywell will coordinate with the City regarding application of an institutional control for these areas.

Refer to the enclosed report for details regarding properties and owner information. Draft deed notices are provided in the appendix section of the enclosed report.

New Jersey Department of Environmental Protection
Site Remediation Program

REMEDIAL ACTION REPORT FORM

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Hudson County Chromate Site 153 (COPR)

List all AKAs: Former Morris Canal

Street Address: Along Route 440 Northbound shoulder, between Carbon Place and Danforth Avenue

Municipality: Jersey City (Township, Borough or City)

County: Hudson Zip Code: 07305

Program Interest (PI) Number(s): G000008767

Case Tracking Number(s) for this submission: RPC930001

Date Remediation Initiated Pursuant to N.J.A.C. 7:26C-2: 06/17/1993

State Plane Coordinates for a central location at the site: Easting: 603480 Northing: 684304

Municipal Block(s) and Lot(s):

Block #: 21902	Lot #: 1	Block #:	Lot #:
Block #: 26704	Lot #: 5	Block #:	Lot #:
Block #:	Lot #:	Block #:	Lot #:
Block #:	Lot #:	Block #:	Lot #:

SECTION B. SUBMISSION STATUS

1. Indicate how the Electronic Data Deliverable (EDD) for this submission is being provided to the NJDEP:

   ☐ Via Email at srpedd@dep.state.nj.us (attach NJDEP confirmation email); or
   ☐ CD (attach to this submission)
   ☐ Not Applicable – No EDD

2. Complete the following Submission and Permit Status Table:

	N/A	Included in this Submission	Previously Submitted	Date of Submission	Date of Revised Submission	Date of Previous NJDEP Approval	Date of Document Withdrawal
Alternative Soil Remediation Standard and/or Screening level Application Form	☒	☐	☐				
Case Inventory Document		☒					
Discharge to Ground Water Permit by Rule Authorization Request	☒	☐	☐				
IEC Engineered System Response Action Report	☒	☐	☐				
Immediate Environmental Concern Report	☒	☐	☐				
LNAPL Interim Remedial Measure Report	☒	☐	☐				
Preliminary Assessment Report	☐	☒	☐				
Public Notification	☐	☐	☒	08/20/2009			
Receptor Evaluation	☐	☒	☐				
Remedial Action Report	☐	☒	☐				
Remedial Action Work Plan	☐	☒	☐				
Remedial Investigation Report	☐	☒	☐				

Response Action Outcome	☒	☐	☐				
Site Investigation Report	☐	☒	☐				
Technical Impracticability Determination	☒	☐	☐				
Vapor Concern Mitigation Report	☒	☐	☐				
Permit Application – list:	☒						
		☐	☐				
		☐	☐				
		☐	☐				
		☐	☐				
Radionuclide Remedial Investigation Workplan	☒	☐	☐				
Radionuclide Remedial Investigation Report	☒	☐	☐				
Radionuclide Remedial Action Workplan	☒	☐	☐				
Radionuclide Remedial Action Report	☒	☐	☐				

SECTION C. SITE USE

Current Site Use *(check all that apply)*

- ☐ Industrial
- ☐ Residential
- ☐ Commercial
- ☐ School or child care
- ☐ Agricultural
- ☐ Park or recreational use
- ☐ Vacant
- ☐ Government
- ☒ Other: utility easement

Intended Future Site Use *(check all that apply)*

- ☐ Industrial
- ☐ Residential
- ☐ Commercial
- ☐ School or child care
- ☐ Park or recreational use
- ☐ Vacant
- ☐ Government
- ☐ Future site use unknown
- ☒ Other: utility easement

SECTION D. CASE TYPE: *(check all that apply)*

- ☒ Administrative Consent Order (ACO)
- ☐ Brownfield Development Area (BDA)
- ☐ Child Care Facility
- ☒ Chrome Site (Chromate chemical production waste)
- ☐ Coal Gas
- ☐ Due Diligence with RAO
- ☐ Hazardous Discharge Remediation Fund (HDSRF) Grant/Loan
- ☐ ISRA
- ☐ Landfill (SRP subject only)
- ☐ Regulated Underground Storage Tank (UST)
- ☐ Remediation Agreement (RA)/ Remediation Certification
- ☐ School Development Authority (SDA)
- ☐ School facility
- ☐ Spill Act Defense – Government Entity
- ☐ Spill Act Discharge
- ☐ UST Grant/Loan
- ☐ Other: _____

Federal Case *(check all that apply)*

☐ RCRA GPRA 2020 ☐ CERCLA/NPL ☐ USDOD ☐ USDOE

1. Is the party conducting remediation a government entity? ..... ☐ Yes ☒ No
   If "Yes," check one: ☐ Federal ☐ State ☐ Municipal ☐ County

SECTION E. PUBLIC FUNDS

Did the remediation utilize public funds? ..... ☐ Yes ☒ No

If "Yes," check applicable:

- ☐ UST Grant
- ☐ HDSRF Grant
- ☐ Spill Fund
- ☐ UST Loan
- ☐ HDSRF Loan
- ☐ Schools Development Authority
- ☐ Brownfield Reimbursement Program
- ☐ Landfill Reimbursement Program
- ☐ Environmental Infrastructure Trust

SECTION F. SCOPE OF REMEDIAL ACTION REPORT

1. Does the RAR address:
   - ☐ Area(s) of Concern (AOCs) Only
   - ☒ Entire Site (Based on a completed and submitted Preliminary Assessment/Site Investigation)
2. Total number of contaminated AOCs associated with the case: 2

3. Total number of contaminated AOCs addressed in this submission: 2

4. Are there any outstanding contaminated AOCs associated with the case where the remedial action has NOT been performed? ☐ Yes ☒ No

When answering the remaining questions on this form consider only the AOCs addressed in this submission.

SECTION G. GENERAL

1. Does this submission include Remedial Action Permit Application(s) that require Site Remediation Program approval? ☐ Yes ☒ No
2. Was a remediation initiated after May 6, 2010, for new construction or a change in the use of the site proposed for the purpose of residential use, use as a licensed child care center or use as a school? ☐ Yes ☒ No
   If "Yes," was an unrestricted use or a presumptive remedy implemented? ☐ Yes ☐ No
3. Was an alternative remedy approved by the NJDEP? ☐ Yes ☒ No
   If "Yes," provide the date of the approval: _____
4. Has the remediation varied from the Technical Rules? ☐ Yes ☒ No
   If "Yes." provide the citation(s) from which the remediation has varied and the page(s) in the attached document where the rationale for the variance is provided.
   N.J.A.C. 7:26E- _____ Page _____
   N.J.A.C. 7:26E- _____ Page _____
   N.J.A.C. 7:26E- _____ Page _____
5. Were the laboratory Reporting Limits below applicable remediation standards/screening levels criteria required for the contaminants of concern for the AOCs addressed in this submission? ☒ Yes ☐ No
6. Have past NJDEP-documented deficiencies been addressed in this submission? ☐ Yes ☐ No ☒ N/A
7. Did the remediation deviate from that proposed in the Remedial Action Workplan? ☐ Yes ☒ No
   If "Yes," specify the section/page(s) in the report where the deviation(s) are discussed:
   _____
8. Did the remedial action render the property unusable for future redevelopment or for recreational use (N.J.A.C. 7:26C-6.4(b)? ☐ Yes ☒ No

SECTION H. SITE CONDITIONS

1. At any time, was there any radiological contamination detected at the AOCs addressed in this submission? ☐ Yes ☒ No
2. At any time, did any of the AOCs addressed in this submission contain Ordnance and Explosives/ Unexploded Ordnance (OE/UXO)? ☐ Yes ☐ No
3. Did the remedial action involve containment of free product? ☐ Yes ☒ No
4. Has dioxin been detected at levels above NJDEP's interim direct contact soil screening level of 50 ppt dioxin TEQ (TCDD Toxicity Equivalence Quotient) in any AOCs addressed in this submission? ☐ Yes ☒ No
5. Have any of the following contaminants *ever* been detected in sediment above the ecological screening levels at the AOCs addressed in this submission? ☐ Yes ☐ No
   If "Yes," check all that apply: (Sediment sampling was not conducted)
   ☐ Arsenic ☐ Dioxin ☐ Mercury ☐ PCBs ☐ Pesticides
6. Is remediation complete in all affected media at the AOCs addressed in this submission? ☒ Yes ☐ No
7. Did contaminants from the AOCs addressed in this submission discharge to surface water? ☐ Yes ☒ No
8. Did contaminants from the AOCs addressed in this submission discharge to an Environmentally Sensitive Natural Resource (ESNR)? ☐ Yes ☒ No

9. Are any of the following conditions currently present for the AOCs addressed in this submission? *(check all that apply):*

Groundwater:

- ☒ Contaminated ground water in the overburden aquifer
- ☐ Contaminated ground water in a confined aquifer
- ☐ Contaminated ground water in the bedrock aquifer
- ☐ Contaminated ground water in multiple aquifer units
- ☐ Multiple distinct ground water plumes
- ☐ Contaminated ground water migrating off-site
- ☐ Natural background ground water contamination
- ☐ Contaminated ground water discharging to surface water or Environmentally Sensitive Natural Resource (ESNR)
- ☐ Residual or free product
- ☐ Radionuclides

Soil:

- ☒ On-site discharge(s) impacting soil off-site
- ☒ Chromate Chemical Production Waste/COPR
- ☐ Munitions and explosives of concern
- ☒ Contaminated soil in the saturated zone
- ☐ Historic pesticide impacts to soil
- ☐ Residual or free product
- ☐ Radionuclides
- ☒ Historic Fill
- ☐ Natural background only above Impact to Ground Water Cleanup Criteria
- ☐ Natural background above Direct Contact Remediation Standards
- ☐ Soil contamination in an ESNR

SECTION I. APPLICABLE REMEDIATION STANDARDS

1. Were Default Remediation Standards used for all contaminants? ..... ☒ Yes ☐ No

   If "Yes," check all that apply:

   (NJDEP soil policy criteria for hexavalent chromium)

   - ☐ Direct Contact
   - ☐ Impact to Ground Water Soil Screening Levels
   - ☐ Ecological Screening Levels

2. Has compliance averaging been utilized to determine compliance with the Soil Remediation Standards? ..... ☐ Yes ☒ No

   If "Yes," check all that apply:

	Compliance Averaging Method Utilized			
Pathway	Arithmetic Mean	95 Percent UCL	Spatially Weighted Average	75 Percent/ 10X Procedure
☐ Ingestion-Dermal Pathway	☐	☐	☐	☐
☐ Inhalation Pathway	☐	☐	☐	☐
☐ Impact to Ground Water Pathway	☐	☐	☐	☐

3. Has a compliance option been utilized to determine compliance with the Impact to Ground Water Pathway? (If "Yes," check all that apply) ..... ☐ Yes ☒ No
   - ☐ Immobile Compounds
   - ☐ Data evaluation for metals and semi-volatiles
   - ☐ Data evaluation for volatile organics derived from discharges of petroleum mixtures
4. Was an interim standard used for a contaminant where a standard does not exist? ..... ☒ Yes ☐ No
   (NJDEP soil policy criteria for hexavalent chromium)
5. Were Alternate Remediation Standards used for the Ingestion/Dermal Pathway? ..... ☐ Yes ☒ No
6. Were Alternate Remediation Standards used for the Inhalation Pathway? ..... ☐ Yes ☒ No
7. Were Site Specific Standards used for the Impact to Ground Water Pathway? ..... ☐ Yes ☒ No

   If "Yes," check all that apply:

   - ☐ Soil-Water Partitioning Equation ☐ SPLP ☐ Sesoil ☐ Sesoil/AT123D
   - ☐ DAF Modification
8. Were Site Specific Ecological Remediation Goals used? ..... ☐ Yes ☒ No
9. What is the ground water classification for this site as per N.J.A.C. 7:9C? (check all that apply)
   - ☐ Class I-A
   - ☐ Class I-PL Pinelands Protection Area
   - ☐ Class I-PL Pinelands Preservation Area
   - ☒ Class II-A
   - ☐ Class III-A
   - ☐ Class III-B

SECTION J. ALTERNATIVE AND CLEAN FILL USE

1. Was alternative fill used? ☐ Yes ☒ No
2. Was clean fill used? ☒ Yes ☐ No
3. Was material sent off-site for use as alternative and/or clean fill? ☐ Yes ☒ No
   If "Yes," specify the section/page in the RAR where it states the SRP site receiving this alternative and/or clean fill: _____
4. Was material sent off-site for use as alternative and/or clean fill at a non-SRP site? ☐ Yes ☐ No
   If "Yes," specify the section/page in the RAR where it states the non-SRP site receiving this alternative and/or clean fill: _____
5. Was alternative fill used in excess of the amount required for the remedial action? ☐ Yes ☐ No
   If "Yes," was the NJDEP's preapproval obtained pursuant to N.J.A.C. 7:26E-5.2(b)3? ☐ Yes ☐ No

SECTION K. REMEDIAL ACTION REPORT INFORMATION

Soils

1. Did the remedy include a remedial action for soils? ☒ Yes ☐ No
   If "No," skip to **Ground Water**
2. Is a restricted use required? ☒ Yes ☐ No
   If "Yes," indicate the type of restriction being implemented. deed notice
3. If applicable, has consent from all involved property owners been obtained (i.e., for institutional or engineering controls)? (See attachment A for information regarding deed notices) ☒ Yes ☐ No
4. Was an engineering control required? ☒ Yes ☐ No
   If "Yes," indicate the receptor(s) each engineering control is intended to protect. *(check all that apply)*
   ☒ Human ☐ Ecological ☐ Offsite Impacts

Ground Water

5. Did the remedy include a remedial action for ground water? ☐ Yes ☒ No
   If "No," skip to **Ecological**
6. Is a restricted use required for ground water? ☒ Yes ☐ No
7. Is a revised CEA required? (Regional CEA for chromium approved by NJDEP 02/16/2012) ☐ Yes ☒ No
8. Do any contaminant levels in ground water currently exceed the vapor intrusion ground water trigger? ☐ Yes ☒ No

Ecological

9. Did the remedy include a remedial action for Environmentally Sensitive Natural Resources (ESNRs)? ☐ Yes ☒ No
   If "No," skip to **Indoor Air**
10. Was post-remedial sampling performed to determine whether contaminant levels currently meet ecological screening levels or ecological remediation goals? ☐ Yes ☐ No
11. Did the remedial action require filling of State open waters or wetlands? ☐ Yes ☐ No
12. Have ecological risk-based remediation goals been developed? ☐ Yes ☐ No
    If "Yes," have the ecological risk-based remediation goals been approved by NJDEP? ☐ Yes ☐ No
13. Have Risk Management Decision (RMD) goals been developed? ☐ Yes ☐ No
    If "Yes," have the RMD goals been approved by NJDEP? ☐ Yes ☐ No

Indoor Air

14. Have any vapor intrusion engineering controls/mitigation systems been installed in order to mitigate a vapor condition in a structure? ☐ Yes ☒ No

If "Yes," check each type of engineering control that was implemented:

- ☐ Subsurface Depressurization System
- ☐ Subsurface Ventilation System
- ☐ Soil Vapor Extraction System
- ☐ HVAC Positive Pressure
- ☐ Other (specify): _____

SECTION L. PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION AND CERTIFICATION

Full Legal Name of the Person Responsible for Conducting the Remediation: Honeywell

Representative First Name: John Representative Last Name: Morris

Title: Remediation Director

Phone Number: (973) 455-4003 Ext: _____ Fax: _____

Mailing Address: 101 Columbia Road/SOL-4

City/Town: Morristown State: New Jersey Zip Code: 07962

Email Address: John.Morris@honeywell.com

This certification shall be signed by the person responsible for conducting the remediation who is submitting this notification in accordance with Administrative Requirements for the Remediation of Contaminated Sites rule at N.J.A.C. 7:26C-1.5(a).

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein, including all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, to the best of my knowledge, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties.

Signature: John J. Morris Date: 12/12/14

Name/Title: John Morris/Remediation Director

No changes to contact information since last submission ☒

SECTION M. LICENSED SITE REMEDIATION PROFESSIONAL INFORMATION AND STATEMENT

LSRP ID Number: Not applicable

First Name: _____ Last Name: _____

Phone Number: _____ Ext: _____ Fax: _____

Mailing Address: _____

City/Town: _____ State: _____ Zip Code: _____

Email Address: _____

This statement shall be signed by the LSRP who is submitting this notification in accordance with section 14 of P.L.2009 c.60 (N.J.S.A. 58:10C-14), and paragraphs (1) and (2) of subsection b. of section 30 of P.L.2009 c.60 (N.J.S.A. 58:10B=1.3b(1) and (2)).

I certify that I am a Licensed Site Remediation Professional authorized pursuant to N.J.S.A. 58:10C to conduct business in New Jersey. As the Licensed Site Remediation Professional of record for this remediation, I:

[SELECT ONE OR BOTH OF THE FOLLOWING AS APPLICABLE]:

☐ *directly oversaw and supervised all of the referenced remediation, and\or*

☐ *personally reviewed and accepted all of the referenced remediation presented herein.*

I believe that the information contained herein, and including all attached documents, is true, accurate and complete.

It is my independent professional judgment and opinion that the remediation conducted at this site, as reflected in this submission to the Department, conforms to, and is consistent with, the remediation requirements in N.J.S.A. 58:10C-14.

My conduct and decisions in this matter were made upon the exercise of reasonable care and diligence, and by applying the knowledge and skill ordinarily exercised by licensed site remediation professionals practicing in good standing, in accordance with N.J.S.A. 58:10C-16, in the State of New Jersey at the time I performed these professional services.

I am aware pursuant to N.J.S.A. 58:10C-17 that for purposely, knowingly or recklessly submitting false statement, representation or certification in any document or information submitted to the board or Department, etc., that there are significant civil, administrative and criminal penalties, including license revocation or suspension, fines and being punished by imprisonment for conviction of a crime of the third degree.

LSRP Signature: _____ Date: _____

LSRP Name/Title: _____

Company Name: _____

No changes to contact information since last submission ☐

Completed forms should be sent to:

Bureau of Case Assignment & Initial Notice
Site Remediation Program
NJ Department of Environmental Protection
401-05H
PO Box 420
Trenton, NJ 08625-0420

Attachment A

Hudson County Chromate Site 153 (COPR)
Jersey City, New Jersey
PI#G000008767

Remedial Action Report Form

Section K. Remedial Action Report Information - Soils

K.3. If applicable, has consent from all involved property owners been obtained (i.e., for institutional and engineering controls)?

Honeywell owns the property comprising the Site, thus property owner consent for restricted use at the Site property is not required. A deed notice was recorded on November 30, 2010. Remedial actions were documented in previous report submittals to the NJDEP and are discussed in the RAR section of the enclosed report. The appendix section includes a modified Deed Notice which reflects the completed remedial actions, current block and lot, and current NJDEP model deed notice format. Following NJDEP review of the enclosed report, the modified deed notice will be recorded and a Remedial Action Soil Permit application will be submitted.

The RAWP section of the enclosed report addresses proposed remedial actions on portions of adjacent offsite commercial properties and roadway right-of-way (ROW) areas, i.e., Route 440 shoulder area and portions of City of Jersey City street ROW areas. The proposed remedial actions include implementation of engineering and institutional controls, similar to remedial actions completed at the Morris Canal Site. Honeywell has shared the proposed remedial actions with the commercial property owners and NJDOT representatives, and is working with each of these entities to obtain concurrence on the remedial approaches, including implementation of institutional controls. For portions of City of Jersey City road ROW areas, proposed remedial actions are consistent with the sewer protocol which has been approved by the City of Jersey City and include the use of existing road pavement as engineering control in conjunction with an institutional control (deed notice). Honeywell will coordinate with the City regarding application of an institutional control for these areas.

Refer to the enclosed report for details regarding properties and owner information. Draft deed notices are provided in the appendix section of the enclosed report.

New Jersey Department of Environmental Protection
Site Remediation Program

FULL LABORATORY DATA DELIVERABLES FORM

☐ LSRP ☐ Subsurface Evaluator

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Hudson County Chromate Site 153 (COPR)

List all AKAs: Former Morris Canal

Street Address: Along Route 440 Northbound shoulder, between Carbon Place and Danforth Avenue

Municipality: Jersey City (Township, Boro or City)

County: Hudson Zip Code: 07305

Program Interest (PI) Number(s): G000008767 Case Tracking Number(s): RPC930001

SECTION B. NJDEP CASE MANAGER

Do you have an assigned Case Manager? ☒ Yes ☐ No

If "Yes," please list the Case Manager: David Doyle

SECTION C. REMEDIAL PHASE

☐ Immediate Environmental Concern
☐ Site Investigation Report
☒ Remedial Action Report
☐ Preliminary Assessment Report
☒ Remedial Investigation/Remedial Action Work Plan
☐ Response Action Outcome

SECTION D. Matrix Type/Analysis and Number of Samples

☐ Potable Well Water # of samples: _____ Sampling Date: _____
Analytical Method(s) _____

☐ Indoor Air # of samples: _____ Sampling Date: _____
Analytical Method _____

☐ Polychlorinated dibenzo-p-dioxins/polychlorinated dibenzofurans # of samples: _____ Sampling Date: _____
Analytical Method _____

☒ Hexavalent chromium soil sample # of samples: 406 Sampling Date: _____ (various sampling dates)
Analytical Method SW 7196; SW 7199

☐ Other _____ # of samples: _____ Sampling Date: _____
Analytical Method _____

☐ Other _____ # of samples: _____ Sampling Date: _____
Analytical Method _____

☐ Other _____ # of samples: _____ Sampling Date: _____
Analytical Method _____

SECTION E. GENERAL

1. Was a full laboratory data deliverables package provided? ☒ Yes ☐ No
2. Was a certified laboratory(s) used for the analyses? ☒ Yes ☐ No
   Provide name of laboratory(s): Accutest Laboratories, Dayton, NJ; NJDEP Cert. No. 12129
3. Were data summaries provided for all samples? ☒ Yes ☐ No
4. Were electronic deliverables submitted? ☒ Yes ☐ No
5. For air sample data, were the TO-15 Conversion Tables (hit-lists) provided on disc in the appropriate Excel format pursuant to the VIG? ☐ Yes ☐ No

Section F. Data Quality Assurance/Quality Control

1. Were the appropriate sample preservation requirements met? ☒ Yes ☐ No
2. Were appropriate sample holding times (for both extraction/sample preparation and analysis) met? ☒ Yes ☐ No
   If "No," provide a brief explanation.

3. Were the samples diluted? ☒ Yes ☐ No
   Indicate the identity of the samples and why.
   See Validation Reports in Appendix H
   RIR/RAWP/RAR dated 12/2014

4. If applicable, did sample dilutions result in elevated reporting limits that exceed applicable standards? ☒ Yes ☐ No
   If "Yes," list the affected samples.
   See Validation Reports in Appendix H
   RIR/RAWP/RAR dated 12/2014

5. Were any applicable standards exceeded for any samples? ☒ Yes ☐ No
   If "Yes," include the number of samples and laboratory sample identification numbers.
   See Table 3 Soil Sample Results
   RIR/RAWP/RAR dated 12/2014

6. Were the laboratory reporting limits below the applicable remediation standards/criteria required for the site? ☒ Yes ☐ No
   If "No," provide a brief explanation of action taken.

7. Were qualifications noted in the non-conformance summary? ☒ Yes ☐ No
   Provide a brief explanation.
   See Validation Reports in Appendix H
   RIR/RAWP/RAR dated 12/2014

8. Were qualified data used? ☒ Yes ☐ No
9. Were rejections noted in the non-conformance summary? ☐ Yes ☒ No
   Provide a brief explanation.

10. Were rejected data used? ☐ Yes ☒ No

If "Yes," please indicate reasons rejected data were used:

- ☐ For Hex Chrome, data were rejected because spike recovery was less than 50%.
- ☐ Data were rejected due to missing deliverables.
- ☐ Data were rejected but an applicable standard exceedance exists.
- ☐ Data were rejected in an early phase of a remediation; however, additional sampling and analysis are scheduled to be performed.
- ☐ Other reasons not noted directly above. Explain:

11. Were the quality control criteria associated with the compounds of concern at the site met?		☒ Yes	☐ No
12. Were the QC Summary Forms reviewed?		☒ Yes	☐ No
13. Surrogate recoveries acceptable	Not applicable to hexavalent chromium	☐ Yes	☐ No
14. Internal Standards acceptable	Not applicable to hexavalent chromium	☐ Yes	☐ No
15. MS/MSDs acceptable		☒ Yes	☐ No
16. Tune summaries acceptable	Not applicable to hexavalent chromium	☐ Yes	☐ No
17. Calibration summaries acceptable		☒ Yes	☐ No
18. Serial dilutions acceptable	Not applicable to hexavalent chromium	☐ Yes	☐ No
19. Inorganic duplicates acceptable	See Validation Reports in RIR/RAWP/RAR Appendix H	☐ Yes	☐ No
20. LCS recovery acceptable		☒ Yes	☐ No
21. Other QC acceptable?		☒ Yes	☐ No

Provide a brief explanation if applicable:

See Validation Reports in Appendix H
RIR/RAWP/RAR dated 12/2014

SECTION G. PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION AND CERTIFICATION

Full Legal Name of the Person Responsible for Conducting the Remediation: Honeywell

Representative First Name: John Representative Last Name: Morris

Title: Remediation Director

Phone Number: (973) 455-4003 Ext: Fax: (973) 695-2915

Mailing Address: 101 Columbia Road

City/Town: Morristown State: New Jersey Zip Code: 07962

Email Address: John.Morris@honeywell.com

This certification shall be signed by the person responsible for conducting the remediation who is submitting this notification in accordance with Administrative Requirements for the Remediation of Contaminated Sites rule at N.J.A.C. 7:26C-1.5(a).

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein, including all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, to the best of my knowledge, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties.

Signature: John J. Morris Date: 12/12/14

Name/Title: John Morris/Remediation Director **No Changes Since Last Submittal** ☒

SECTION H. LICENSED SITE REMEDIATION PROFESSIONAL INFORMATION AND STATEMENT

LSRP ID Number: Not applicable

First Name: _____ Last Name: _____

Phone Number: _____ Ext: _____ Fax: _____

Mailing Address: _____

City/Town: _____ State: _____ Zip Code: _____

Email Address: _____

This statement shall be signed by the LSRP who is submitting this notification in accordance with SRRA Section 16 d. and Section 30 b.2.

I certify that I am a Licensed Site Remediation Professional authorized pursuant to N.J.S.A. 58:10C to conduct business in New Jersey. As the Licensed Site Remediation Professional of record for this remediation, I:

[SELECT ONE OR BOTH OF THE FOLLOWING AS APPLICABLE]:

☐ *directly oversaw and supervised all of the referenced remediation, and\or*

☐ *personally reviewed and accepted all of the referenced remediation presented herein.*

I believe that the information contained herein, and including all attached documents, is true, accurate and complete.

It is my independent professional judgment and opinion that the remediation conducted at this site, as reflected in this submission to the Department, conforms to, and is consistent with, the remediation requirements in N.J.S.A. 58:10C-14.

My conduct and decisions in this matter were made upon the exercise of reasonable care and diligence, and by applying the knowledge and skill ordinarily exercised by licensed site remediation professionals practicing in good standing, in accordance with N.J.S.A. 58:10C-16, in the State of New Jersey at the time I performed these professional services.

I am aware pursuant to N.J.S.A. 58:10C-17 that for purposely, knowingly or recklessly submitting false statement, representation or certification in any document or information submitted to the board or Department, etc., that there are significant civil, administrative and criminal penalties, including license revocation or suspension, fines and being punished by imprisonment for conviction of a crime of the third degree.

LSRP Signature: _____ Date: _____

LSRP Name/Title: _____ **No Changes Since Last Submittal** ☐

Company Name: _____

Completed forms should be sent to:

Bureau of Case Assignment & Initial Notice
Site Remediation Program
NJ Department of Environmental Protection
401-05H
PO Box 420
Trenton, NJ 08625-0420

SECTION I. SUBSURFACE EVALUATOR UST REPORT CERTIFICATION FORM

Certification by the Subsurface Evaluator:

I certify under penalty of law that the work was performed under my oversight and I have reviewed the report and all attached documents, and the submitted information is true, accurate and complete in accordance with the requirements of N.J.A.C. 7:14B and N.J.A.C. 7:26E. I am aware that there are significant civil and criminal penalties for submitting false, inaccurate or incomplete information including fines and/or imprisonment.

Name: Not applicable UST Cert. No.: _____

Firm: _____ Firm's UST Cert. Number: _____

Firm Address: _____

City/Town: _____ State: _____ Zip Code: _____

Phone Number: _____ Ext: _____ Fax: _____

Signature: _____ Date: _____

No Changes Since Last Submittal ☐

Completed forms should be sent to:

Bureau of Case Assignment & Initial Notice
Site Remediation Program
NJ Department of Environmental Protection
401-05H
PO Box 420
Trenton, NJ 08625-0420

	A	B	D	E	F	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	**Case Name**	Hudson County Chromate Site 153 Former Morris Canal																		
2	**PI**	G000008767																		
3	**IMPORTANT**	*Do not copy and paste into more than 1 cell at a time because it can disrupt hidden equations*																		
4	**Case In ento**	**Document Ve sion 1.2 06 09 14**																		
5	**AOC ID**	**AOC T pe**	**AOC Details**	**Confi me Contamination**	**AOC Status**	**Status Date**	**Inci ent**	**DEP AOC Num e**	**Contaminate Me ia**	**Contaminants of Conce n**	**A itional Contaminants of Conce n**	**A itional Contaminants of Conce n**	**Applica le Reme iation Stan a**	**E posu e Route**	**A itional E posu e Route**	**RA T pe**	**A itional RA T pe**	**A itional RA T pe**	**Was an O e of Ma nitu e E aluation Con ucte**	**Acti it**
6	AOC-1	Other areas of concern - Any area suspected of containing contaminants	Hexavalent chromium impacted fill	Yes	RAR	6/17/1993		1	Mixed Media	Metals			Remediation Standards	Ingestion/Dermal	Ground Water	Capping	Excavation	Monitored Natural Attenuation	No	June 1993 - Administrative Consent Order. November 1999 - Draft RI Report for Study Area 5. June 2005 - RIWP Addendum for additional sampling and delineation at Site 153. October 2010 - IRM Report Site 153 South Lower Segment: soil excavation and capping. February 2011 - Initial Receptor Evaluation submitted. September 2011 - Consent Judgment including modifications to 1993 ACO. September 2012 - RAR for Study Area 5 Sites 090/184 (NJCU Property) including Site 153 North Segment abutting Sites 090/184. November 2013 - IRM Report Site 153 South Upper Segment: soil excavation and capping. December 2014 - RIR/RAWP/RAR submitted.
7	AOC-2	Discharge and disposal area - Historic fill material area/other fill area	Historic fill	Yes	RAR			2	Soil	Metals + PAHs			Remediation Standards	Ingestion/Dermal		Capping			No	Historic fill contaminants including PAHs and metals (e.g., arsenic, lead) which occur on portions of the site coincidently with hexavalent chromium-impacted soils. The remedial actions for chromium include engineering controls (capping) and institutional controls (deed notice), which also address historic fill contaminants as they occur above the NJDEP SRS coincidently with chromium-impacted soils.
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REMEDIAL INVESTIGATION REPORT
REMEDIAL ACTION WORK PLAN
REMEDIAL ACTION REPORT

HUDSON COUNTY CHROMATE SITE 153
FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY
PI#G000008767

Prepared for

Honeywell

101 Columbia Road
Morristown, NJ 07962

Prepared by

AMEC Environment and Infrastructure, Inc.
200 American Metro Boulevard, Suite 113
Hamilton, New Jersey 08619

DECEMBER 2014
REVISED MARCH 2015

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Remedial Action Report
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Case Inventory Document

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APPENDICES (Volume 2)

EXECUTIVE SUMMARY

This Remedial Investigation Report (RIR), Remedial Action Work Plan (RAWP) and Remedial Action Report (RAR) addresses Site 153 Morris Canal (Site), which is part of a group of sites known as Study Area 5 (SA-5) on the west side of Jersey City. The Site consists of a narrow strip of land (approximately 24 feet wide) along the east side of Route 440 between Danforth Avenue and Carbon Place, and adjacent to other SA-5 sites including Sites 090/184 (Baldwin Steel/M.I. Holdings; New Jersey City University [NJCU] property) and Site 117 (Ryerson Steel; current Home Depot retail facility).

The Site is used as a utility easement and contains a force main sewer pipeline operated by the Bayonne Municipal Utilities Authority and other utilities including electric, gas and water lines that serve adjacent commercial businesses. Honeywell acquired the Site property from the City of Bayonne in 2007. The Site and surrounding area are located within the Bayside Redevelopment Area. To support the Bayside Redevelopment Plan, future road improvements are expected to expand Route 440, which may affect remedial actions in the area of the Site.

This report addresses remedial investigation (RI) and remedial action (RA) requirements for chromium-related contamination on the Site in accordance with the NJDEP Technical Requirements for Site Remediation and the Consent Judgment between Honeywell and NJDEP dated September 7, 2011. The Site is also the subject of Consent Decrees between Honeywell and the Hackensack Riverkeeper, Inc. (Riverkeeper or Plaintiffs) dated January 21, 2010, including the Consent Decree for Remediation of the NJCU Redevelopment Area (which includes Site 153 North) and the Consent Decree for Sites 79 and 153 South. For the purpose of site identification and remedial action, Site 153 has been divided into several sections as described in the SA-5 Consent Decrees: Site 153 North (next to NJCU property), Site 153 South Upper Segment (next to Site 117) and Site 153 South Lower Segment (south of Site 117).

Remedial Investigation

Honeywell completed soil and groundwater sampling for characterization and delineation of hexavalent chromium with respect to the NJDEP soil criteria of 20 milligrams per kilogram (mg/kg) and the NJDEP Ground Water Quality Standard

(GWQS) of 70 micrograms per liter. As owner of the Site, Honeywell is also addressing Preliminary Assessment/Site Investigation requirements and non-chromium contaminants associated with historic fill at the Site with this submittal.

RI results indicate that hexavalent chromium was detected in soils above 20 mg/kg within the majority of the Site; the highest concentrations were detected at depths between 2 and 14 feet below grade in the northern part of the Site (next to Sites 117 and 90/184). Based on the RI data, the horizontal and vertical extent of hexavalent chromium in soils above the NJDEP soil criteria of 20 mg/kg is delineated to the north, south, and east of the Site. Delineation is not fully completed along part of the western boundary (within the Route 440 right of way); additional delineation to the west, if needed, may be coordinated with future RI sampling associated with Site 187 (Route 440 Median Strip) and/or during future work associated with Route 440 roadway improvements. From a study area-wide perspective, delineation farther to the west is achieved based on data for other sites (Study Areas 6 and 7) located on the west side of Route 440. Other contaminants detected in soils include metals and polycyclic aromatic hydrocarbons (PAHs) typically associated with historic fill.

The extent of chromium contamination in the shallow groundwater zone above the NJDEP Groundwater Quality Standard has been delineated. Deep groundwater (saturated zones below the meadow mat) is being addressed as part of the Study Area-7 regional groundwater investigation and remedy.

Remedial actions have been completed at Site 153 and are discussed in the RAR section of this report. In some locations, chromium-impacted soil has been delineated to within portions of adjacent commercial properties and road right-of-way (ROW) areas including the Route 440 shoulder area (part of the New Jersey Department of Transportation [NJDOT] ROW) and portions of City of Jersey ROW areas. These properties are located along the perimeter of the Site 153 and are referred to as “offsite properties” because they are not part of the properties comprising SA-5. The RAWP section of this report includes proposed remedial actions for chromium on those offsite properties adjacent to the Morris Canal where chromium impacts have been identified, with the exception of the Eden Wood Property at which additional investigations are planned to confirm the extent of chromium-impacted soils.

Site 153 Morris Canal Site – Remedial Actions Completed

Honeywell completed remedial actions at Site 153 during 2009 to 2011. Remedial actions at Site 153 North were completed as part of the remedial actions at the NJCU property and documented in a RAR dated September 2012. Remedial actions at Site 153 South Lower and Upper Segments, referred to as interim remedial measures in the Consent Decree, were documented in report submittals to the NJDEP dated October 13, 2010 and November 26, 2013, respectively.

The remedial actions included a combination of shallow soil excavation and engineering controls (capping) consistent with the requirements of the Sewer Protocol as specified in the Consent Judgment. The remedial actions for chromium also address contaminants related to historic fill which occur coincidently with hexavalent chromium at the Site.

In the event of sewer repair or replacement at Site 153, which is expected to occur from time to time to maintain efficient operations, Honeywell is required to engage in additional remediation of chromium contaminated soils at Site 153. *See* Paragraph 71 of the Consent Decree Regarding Sites 79 and 153 South (Consent Decree) *in Jersey City Municipal Utilities Authority v. Honeywell, Jersey City Incinerator Authority v. Honeywell, and Hackensack Riverkeeper v. Honeywell, 05-5955 (consolidated), (D. NJ) (entered January 2, 2010) (ECF No. 301).*

A Deed Notice for Site 153 was recorded on November 30, 2010. A modified Deed Notice has been prepared which reflects the completed remedial actions, current block and lot, and NJDEP current model deed notice format. It is expected that, following NJDEP review of this report, the modified Deed Notice will be recorded and a RA Soil Permit Application will be submitted to the NJDEP.

Offsite Properties – Proposed Remedial Actions

Remedial actions for chromium-impacted soils at offsite properties (identified below) are proposed in the RAWP section of this report. The proposed remedial actions for offsite properties include implementation of engineering controls (capping) and institutional controls (Deed Notices). Excavation of shallow soils in conjunction with capping is proposed on portions of the commercial properties.

Property	Block/Lot	Land Use/Description
Danforth Realty, LLC	Block 26101, Lot 7	Commercial (gas station facility)
NJDOT Route 440 ROW	Not applicable	State highway (shoulder area)
City of Jersey City ROW	Not applicable	City street – portions of Water Street, Fisk Street, Carbon Place and Danforth Avenue

The proposed remedial actions for chromium comply with the NJDEP Chromium Policy and the Technical Requirements for Site Remediation. Implementation of engineering and institutional controls for road ROW areas is consistent with the Sewer Protocol as specified in the Consent Judgment. Honeywell has shared the proposed remedial actions with the commercial property owners and NJDOT representatives, and is working with each of these entities to obtain concurrence on the remedial approaches, including implementation of institutional controls.

For portions of City of Jersey road ROW areas, proposed remedial actions are consistent with the Sewer Protocol which has been approved by the City and includes use of the existing road pavement as engineering control in conjunction with institutional control (deed notice). Honeywell will coordinate with the City regarding application of an institutional control for these areas. Draft deed notices are provided in the appendix.

Honeywell is requesting NJDEP review and approval for:

- The completed interim remedial measures for Site 153 Morris Canal as the final remedial actions for this Site[1]; and,
- The proposed remedial actions for the offsite properties.

[1] Paragraph 71 of the Consent Decree Regarding Sites 79 and 153 South (Consent Decree) in *Jersey City Municipal Utilities Authority v. Honeywell, Jersey City Incinerator Authority v. Honeywell,* and *Hackensack Riverkeeper v. Honeywell,* 05-5955 (consolidated), (D. NJ) (entered January 21, 2010) requires Honeywell to engage in additional remediation of chromium contaminated soils in the event of sewer repair or replacement at Site 153. The approval Honeywell seeks from NJDEP does not in any way impact Honeywell's obligations pursuant to Paragraph 71 of the Consent Decree.

Separate RAWPs will be submitted for the following two offsite properties where chromium-impacted soils have been identified as part of the RI for Site 153:

- 440 Fisk Realty, LLC: This property consists of a narrow strip of land located between Route 440 and Water Street, approximately one block north of Site 153 and next to Site 079. The RIR/RAWP for this property is being submitted separately to facilitate coordination of remedial actions for chromium and non-chromium contaminants with the property owner.
- Eden Wood Realty, LLC: This property is located along the east side of Site 153 (south of Site 117). A separate RIR/RAWP will be submitted for this property following completion of additional investigations to confirm the extent of chromium-impacted soils in the area of an existing building.

Remedial actions for these properties will be coordinated with the remedial actions for the other offsite properties, to the extent practical.

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

This Remedial Investigation Report, Remedial Action Work Plan and Remedial Action Report was prepared by AMEC Environment and Infrastructure, Inc. (Amec) on behalf of Honeywell for Site 153 Morris Canal (Site) located along Route 440 in Jersey City (NJDEP PI#G000008767). The RAWP section of this document includes proposed remedial actions at certain off-site properties including commercial property (identified as Danforth Realty, LLC) and several road ROW areas located adjacent to the Morris Canal Site.

Honeywell (formerly Allied Signal, Inc.) entered into an Administrative Consent Order (ACO) with the NJDEP on June 17, 1993, to investigate and, if necessary, remediate chromium contamination at various sites referred to by the NJDEP as Hudson County Chromate Sites. The sites are grouped into seven study areas.

Site 153 is part of Study Area 5 (SA-5) which includes five contiguous sites on the east side of Route 440 (see **Illustration 1**). Site 153 is located next to the western boundary of other SA-5 sites (Sites 090, 117, and 184); Site 079 is located at the northern end of Site 153.

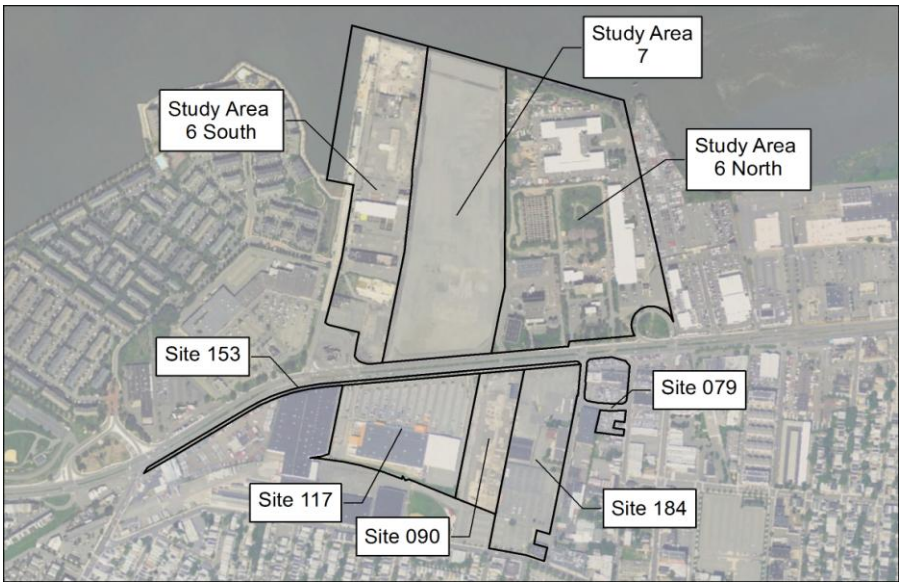

Illustration 1: Site and Surrounding Area

The properties comprising SA-5 and the current land use for each property are follows:

Site No.	Site Name	Current Land Use/Occupant
079	Route 440 Vehicle Corp.	Metro Honda car dealership
090	Baldwin Steel	NJCU West Campus development
117	Ryerson Steel	Home Depot retail facility
153	Former Morris Canal	Utility easement
184	M.I. Holdings	NJCU West Campus development

The 1993 ACO was incorporated into a Consent Judgment between the NJDEP et al. and Honeywell et al. dated September 7, 2011 (Consent Judgment). Under the Consent Judgment, Honeywell is responsible for addressing contamination related to chromate chemical production waste (CCPW), which includes COPR, hexavalent chromium and/or other metals associated with COPR, at the sites identified in the document.

Environmental investigations and remedial actions for chromium related impacts are being conducted in accordance with the ACO, the Consent Judgment, the NJDEP Technical Requirements for Site Remediation (TRSR or Technical Requirements) (N.J.A.C. 7:26E) and the Administrative Requirements for the Remediation of Contaminated Sites (ARRCS) (N.J.A.C. 7:26C). The SA-5 sites are also the subject of Consent Decrees between Honeywell and the Hackensack Riverkeeper, Inc. dated January 21, 2010. The SA-5 Consent Decrees also include Site 79 residential properties at 93 and 95 Fisk Street.

This report addresses remedial investigation (RI) and remedial action (RA) requirements for Site 153. Chromium contamination is associated with historical placement of COPR. Other contaminants associated with historic fill (i.e., polycyclic aromatic compounds, metals) have also been detected at the Site. As owner of the Site, Honeywell is also addressing non-chromium contaminants associated with historic fill and Preliminary Assessment/Site Investigation (PA/SI) requirements for Site 153 with this submittal. This report does not address non-chromium contamination for the off-site properties, as Honeywell is not responsible for non-chromium issues at those sites.

This report, therefore, provides information as follows:

RI Section:

- Addresses investigation and delineation of chromium related contamination and characterization of historic fill at the Site; and
- Delineation of chromium-impacted soils at offsite properties as needed to complete the RI for Site 153

RAWP Section:

- Summarizes the previously submitted work plan documents for Site 153.
- Proposes remedial actions for chromium on offsite properties. These offsite properties include portions of adjacent commercial properties and road ROW areas including the Route 440 shoulder area (part of the NJDOT ROW) and portions of City of Jersey ROW areas. For two of the properties, there will be separate RAWPs as indicated in other sections.

RAR Section:

- Addresses remedial actions completed at Site 153

Initial RI activities for the SA-5 sites were conducted during the late 1990s and documented in a Draft Remedial Investigation Report (RIR) for SA-5 dated November 1999, prepared by TetraTech NUS, Inc. (TTNUS, 1999). At Site 153, additional RI sampling was deemed necessary to complete the delineation of chromium-impacted areas. A Remedial Investigation Work Plan (RIWP) Addendum for Site 153 was submitted by Honeywell to the NJDEP during June 2005. The NJDEP provided comments on the RIWP Addendum to Honeywell in a letter dated July 18, 2006. Honeywell provided responses to the NJDEP comments in a letter dated September 18, 2006. The NJDEP approved the RIWP Addendum via electronic mail correspondence on April 8, 2009. Relevant correspondence is included in **Appendix A**.

Remedial actions at Site 153 were completed during 2009-2011 in accordance with work plans submitted to the NJDEP and with the SA-5 Consent Decrees, including the Consent Decree Regarding Remediation of the NJCU Redevelopment Area and the Consent Decree Regarding Sites 79 and 153 South. Remedial actions at Site 153 North (next to NJCU property) were completed during 2010-2011 and documented in a RAR dated September 2012. Remedial actions at Site 153 South, referred to as

interim remedial measures (IRM) in the Consent Decree for Sites 79 and 153 South, were completed during 2009-2011 and documented in report submittals to the NJDEP dated October 13, 2010 and November 26, 2013 for Site 153 Lower and Upper Segments, respectively (Honeywell, 2010; 2013).

The remedial actions completed at Site 153 comply with the NJDEP Chromium Directive (Policy) as outlined in the NJDEP Memorandum dated February 8, 2007 and meet the requirements of the Sewer Protocol applicable to sewer sites as specified in Appendix B of the Consent Judgment.

1.2 REPORT ORGANIZATION

This document has been prepared to address RI and remedial action requirements in accordance with Technical Requirements, and contains the following sections:

- *Introduction*. This section addresses report purpose, scope and organization.
- *Site Description/Background*. This section contains information on Site description, history, environmental setting, previous investigations and remedial actions.
- *Summary of Remedial Investigation Work Plan*. This section summarizes the RIWP and modifications to the RI scope of work.
- *Remedial Investigation Activities*. This section presents a discussion of the RI field activities and sampling program, which included sampling at the Site and adjacent offsite properties in order to complete the delineation of chromium-related impacts.
- *Remedial Investigation Results*. This section presents a discussion of the RI results.
- *Remedial Action Work Plan*. This section summarizes the previously submitted work plan documents for Site 153 and presents proposed remedial actions for offsite properties.
- *Remedial Action Report*. This section provides a discussion of the remedial actions completed at Site 153.
- *References*. This section presents a list of selected references used in preparing this document.
- *List of Acronyms and Abbreviations*. This section contains a list of acronyms and abbreviations used in this document.

2.0 SITE DESCRIPTION

This section presents descriptive information for Site153 including location, history, land use, environmental setting, previous investigations and remedial actions.

2.1 SITE LOCATION

The former Morris Canal consists of a narrow strip of land (est. 3,200 feet long by 24 feet width) along the eastern side of Route 440 between Carbon Place and Danforth Avenue in Jersey City (see **Illustration #1**). The Site was identified in the 1993 ACO as Block 1289.5, Lot E, located between Danforth Avenue and Carbon Place. The Site property is currently designated as Block 21902, Lot 1 and Block 26704, Lot 5. Site location and boundary maps are included as **Figure 1** and **1B**, respectively. Site plan maps showing RI sample locations for Site 153 South Lower Segment, South Upper Segment, and North Segment are included as **Figures 2A** through **2C**, respectively.

Illustration 2: Site 153 Segments and Adjacent Properties

2.2 SITE HISTORY

Site history is based on information from the November 1999 RIR and review of other historical information including aerial photographs and maps. A detailed discussion of Site history including review of historical aerial photographs and maps is provided in Section 2.6 Preliminary Assessment/Site Investigation. Site history documentation is included in **Appendix B**.

The Site was the location of the former Morris Canal, which operated from the mid-1800s to the early 1900s. In 1924, the Morris Canal was drained and closed, and from 1924 through 1935 the Morris Canal bed was filled. After its closure, the Jersey City portion of the former canal was retained by the Lehigh Valley Railroad (LVRR). Chromium contamination at Site 153 is associated with chromite ore processing residue or "COPR", allegedly used to fill portions of the canal during its closure between 1924 and 1935. The Site property was conveyed by LVRR to Consolidated Rail Corporation in 1976, and was acquired by the City of Bayonne in 1988. During 1990, the City of Bayonne excavated a section of the former Morris Canal and installed a new sewer pipeline. The Site property was acquired by a Honeywell subsidiary (425/445 Route 440 Property, LLC) in 2007.

2.3 CURRENT AND FUTURE LAND USE

The Site is used as a utility easement and contains various utility lines including a 36-inch diameter sanitary sewer pipeline (force main) operated by the Bayonne Municipal Utilities Authority (BMUA). The sewer pipeline (known as the BMUA force main) is constructed of concrete encased pre-stressed concrete cylinder pipe (PCCP), with depths to the top of the pipeline ranging from just below the surface pavement (next to NJCU and Site 117) to approximately 4 to 6 feet below grade (south of Site 117). The sewer pipeline conveys sewage from the City of Bayonne to the Passaic Valley Sewerage Commission. Other utilities along portions of the Site include electric, gas, storm sewer, water, and telephone lines that provide service to adjacent commercial properties. The ground surface at the Site includes pavement, concrete, and landscaped areas.

Surrounding land use includes primarily industrial and commercial properties along Route 440. The Site and surrounding area are located within the Bayside Redevelopment Area of Jersey. The properties on the west side of Route 440 are planned for future redevelopment as part of the Bayfront Redevelopment Plan,

which includes a multi-use development consisting of market housing, retail shops, open space and recreational facilities, and waterfront improvements. To support the Bayside Redevelopment Plan, future road improvements are planned by the NJDOT to expand Route 440 into a multilane boulevard in the area of the Site.

The City of Jersey City issued an Ordinance (Ord. 11-094; dated August 31, 2011) pertaining to setbacks for zones and redevelopment plans abutting or in close proximity to Route 440; the specified setbacks in the area of SA-5 sites are on the order of 60 feet on either side of the current Route 440 roadway. Future road improvements may affect remedial actions and require modification of the existing and/or proposed engineering and institutional controls discussed in this report.

2.4 ENVIRONMENTAL SETTING

2.4.1 Regional and Site Geology

Information on regional and Site geology is based on RI results and information from previous investigations including the RIR for SA-5 dated November 1999 (TetraTech, 2000), the Final Groundwater Investigation Report (FGIR) for SA-7 dated February 2, 2007 (HydroQual, 2007), and the Shallow Groundwater Summary Report for SA-5 Site 117 dated September 2011(Amec, 2011). Relevant data, boring logs, and figures from previous reports are provided in **Appendix C.** Soil boring logs for RI activities completed from 2009 to 2014 are provided in **Appendix D**.

Regional Geology

Jersey City is located within the upper portion of the drainage basin for Newark Bay, and lies within the glaciated section of the Piedmont Province. The bedrock in most of the region is comprised of Lower Jurassic to Upper Triassic age sedimentary rock units known as the Newark Supergroup, and was formed from sediments deposited within a northeast-southwest trending structural basin known as the Newark Basin. The sedimentary rocks of the Newark Supergroup in New Jersey are composed of reddish-brown arkosic sandstone, mudstone, siltstone, conglomerate, and dark gray argillite. These sedimentary rock units have been intruded by igneous rock units (primarily diabase) in the form of sills and dikes, which now generally form ridges such as the Palisades and the Heights in Jersey City.

The bedrock is overlain by glacial till/stratified lacustrine deposits, and alluvial/lacustrine deposits laid down by several glacial advances across the area,

principally during the Wisconsin glacial period. The glacial till is generally described as an unsorted mix of sand, gravel, silt and clay in a continuous layer overlying bedrock, as well as in discontinuous lenses within the stratified lacustrine deposits. The lacustrine deposits generally consist of very fine sand, silt and clay with noticeable layering and varves characteristic of alluvial deposition. The alluvial/lacustrine deposits are typically characterized as a fine to medium sand with some silt that appears to coarsen to the east.

The glacial deposits are typically overlain by alluvium deposited within the floodplains of present day streams. Meadow mat, consisting of decaying marsh deposits, is also found in many low lying areas and much of the region has been artificially filled with material of varying composition in an effort to raise the ground surface above the surrounding surface water features.

Site Geology

Geologic cross sections were prepared for the Site based on information from soil boring logs. Six cross sections were prepared as follows: cross section A-A' runs along the length of the Site (north-south orientation) and five cross sections (B-B' through F-F') run across the width of the Site (east-west orientation). **Figure 3A** shows the locations of the cross sections. Cross section A-A' is shown on **Figures 3B through 3F** and cross sections B-B' through F-F' are shown on **Figure 3G**.

A description of geologic strata encountered during the RI (in order of depth) follows. Information on native deposits below the shallow fill zone is based on borings from the initial RI and regional investigation associated with SA-7.

Fill Material

The ground surface at the Site consists of asphalt pavement and landscaped areas, which overlie man-emplaced fill material, including material identified as historic fill. Based on the RI soil boring logs, the fill ranges in thickness from approximately 8 to 14 feet (average thickness 10 feet) and generally consists of silty sand with miscellaneous fill such as ash, cinders, coal, brick, glass, gravel and slag. Shells were also observed in many of the borings at depths generally between 5 and 10 feet.

Varying amounts of COPR were encountered within the fill at various depths, mainly between 2 and 10 feet below ground surface (bgs) within the northern portion

of the Site (next to Sites 117 and 90/184). The COPR material is generally described in the logs as yellow-green granular material, grains, streaking or staining.

Meadow Mat

Meadow mat consists of a highly organic deposit of peat and/or fine-grained sediments (clay and silt) that that directly underlies the fill across the majority of SA-5, and pinches out east of Route 440. The meadow mat ranges in thickness from less than 1 foot to several feet thick and was encountered at depths from approximately 10 to 14 feet bgs. The meadow mat likely corresponds with the depth of the former canal based on historical information (as discussed in Section 2.7). The meadow mat was not encountered in some borings, indicating possible disturbance from past canal construction activities or poor recovery during soil borings which may be associated with soft materials such as peat.

Lacustrine Sand

The Lacustrine sand consists of fine to medium-grained sand with some silt that underlies the fill material and meadow mat in the area of the Site. Occasional discontinuous layers of brown-gray sand are present near the top of the unit with fine-grained silt lenses throughout. This unit correlates to the S-2 Sand identified beneath SA-7 on the west side of Route 440. The thickness of this unit generally increases from east to west and from north to south, and is bifurcated beneath portions of SA-7 by a red clay unit. A layer of coarse sand and gravel (S-3) has been identified beneath portions of the regional study area, generally at the contact between the S-2 sand and the underlying glacial till/ice contact lacustrine deposits.

Glacial Till Lacustrine Deposits

The upper portion of this unit consists of stratified ice contact/lacustrine deposits including fine sands with inter-layered lenses of silt and clay. Occasional lenses of coarse sand and gravel have also been observed in this unit. The lower portion of this unit consists of glacial till containing dense unsorted silt and fine sand with varying amounts of fine gravel.

Bedrock

Information from the SA-7 regional investigation indicates that bedrock beneath the study area consists predominantly of arkosic and mudstone units of the Lockatong Formation and red-brown siltstone and shale of the Passaic Formation. The bedding planes generally dip to the northwest at approximately 15 degrees while the bedrock

surface generally slopes to the southwest. The bedrock ranges from approximately 75 to 125 feet bgs in the regional study area (HydroQual, 2007).

2.4.2 Regional and Site Hydrogeology

Regional Hydrogeology

The Site is located in a broad area of low relief near Newark Bay, with expected low groundwater gradients. Close to the bay, shallow groundwater is influenced by tidal fluctuations, with low-lying and marshy areas being only slightly above high tide. Regionally, groundwater flow is generally toward the major water bodies in the area, including the Hackensack River, Passaic River, and Newark Bay. These major water bodies serve as regional groundwater discharge points and hydrogeologic boundaries. The size and influence of these water bodies is such that groundwater will not migrate across them, but will discharge to the rivers and the bay.

Groundwater occurs in a multi-unit system. In general, there are two water-bearing zones underlying the study area: (1) a shallow water-bearing zone within unconsolidated materials consisting of man-deposited fill, glacial drift (composed of clay, silt, sand, gravel, and boulders), fluvial fine- to medium-grained sand, and (2) an underlying water-bearing zone within fractured bedrock. Locally, the shallow water bearing zone is further subdivided by the presence of the meadow mat as described below.

Site Hydrogeology

Groundwater occurs within the fill material above the meadow mat under unconfined conditions, and within the lacustrine sand and bedrock under semi-confined and confined conditions, respectively.

Groundwater flow beneath SA-5 has been mapped as part of the comprehensive SA-7 investigation, which has identified four hydrostratigraphic zones as follows:

- *Shallow Zone* – above the meadow mat and generally in fill material.
- *Intermediate Zone* – just below the meadow mat (generally not present beneath most of SA-5 and pinches out east of Route 440).
- *Deep Zone* – within the lacustrine deposits just above the glacial till/ice contact deposits.
- *Upper Bedrock Zone* – Just below the top of bedrock.

The depth to groundwater in the shallow zone is generally on the order of 5 to 7 feet bgs. Groundwater contour maps indicate that overall groundwater flow in the fill material (Shallow Zone) is generally to the west and is influenced by near surface features such as the storm sewer along Route 440 and hydraulic barrier walls associated with remedial actions completed at SA-5 Sites 090/184 (NJCU Property) and SA-7. Shallow groundwater contour maps from the regional investigation are included for reference in **Appendix C-2**. Groundwater flow in the Intermediate Zone just below the meadow mat is similarly to the west-northwest, with less influence from near surface features. Groundwater flow in the Deep Zone is to the north-northwest due to the influence of the more permeable S-3 sand unit. Groundwater flow in the bedrock zone is to the west.

Based on the November 1999 RIR, slug test data for the Shallow Zone (Fill) and Deep Zone (Lacustrine Sand) within SA-5 indicated hydraulic conductivity values ranging from 0.13 feet/day to 1.59 feet/day. Slug test results indicate that the shallow zone materials have moderately low overall permeability (mean 0.5 feet/day), with no substantial difference between the fill and alluvium. An average groundwater flow velocity of 3 feet/year was calculated based on an average hydraulic gradient of 0.005 and porosity of 0.30. Aquifer test results conducted at SA-7 indicated the hydraulic conductivity of the S-3 sand to be significantly higher, on the order of 150 feet/day. Permeability test data for samples collected from the meadow mat and clay deposits within the alluvium indicated permeability values of $1.3x10^{-7}$ cm/sec ($3.7x10^{-4}$ ft/day) and $1.5x10^{-7}$ cm/sec ($4.3x10^{-4}$ ft/day), respectively.

Well Search Results

Previous well searches were conducted as part of the initial RI (TetraTech, 1999) and SA-7 regional investigation (HydoQual, 2007) and initial Receptor Evaluation Report for SA-5 dated February 28, 2011 (Mactec, 2011). The well records search for the Receptor Evaluation included monitoring and/or potable wells located within 0.5-mile; and irrigation, industrial wells, and wells with water-allocation permits located within 1 mile of the Site. Well search results indicate that no potable or water supply wells were identified within 1,000 feet of the Site. One industrial well was identified within ½-mile of the Site, and two industrial wells were identified between ½-mile and one mile of the Site. Other well records consisted of monitoring wells associated with various site investigations and test borings.

Water supply wells identified within one mile of the Site included:

- Well Permit No. 2600043694 (Park, Hee): Industrial well (205 feet deep); located approximately 1500 feet northeast of the Site.
- Well Permit No. 2600002429 (Gas, Inc): Industrial well (117 feet deep); located approximately 3,000 feet southeast of the Site.
- Well Permit No. 2600001335 (Berkley Industries): Industrial well (335 feet deep); located approximately one mile east of the Site.

Groundwater impacts at the Site would not be expected to impact these wells due to the distance and location relative to the Site.

2.4.3 Site Topography and Surface Water

The ground surface at the Site is relatively flat. Ground surface elevations range from approximately 6 to 10 feet (North American Vertical Datum of 1988 or NAVD 1988), with the highest elevations on the northern portion of the Site. Historically, prior to placement of fill, ground surface elevations were lower than current grade. Surface water runoff is controlled by surface pavement and storm water catch basins located along Route 440.

The nearest surface water body is the Hackensack River, located approximately 1,200 feet to the west. SA-5 is located within the Hackensack River basin, which extends northward from Newark Bay into southeastern New York State. In the area of the Site, the river is classified as SE-3 (saline estuarine waters) with the following designated uses: secondary contact recreation; maintenance and migration of fish populations; migration of diadromous fish; maintenance of wildlife; and any other reasonable uses.

The Hackensack River is tidally influenced in the area of Jersey City. According to National Oceanic and Atmospheric Administration (NOAA) records, the mean tide level of the Hackensack River in the area of Jersey City is approximately 2.84 feet above Mean Sea Level (MSL) and the mean tide range is about 5 feet above MSL.

2.4.4 Groundwater Classification

Groundwater beneath the Site and surrounding area is classified by the NJDEP as Class-II-A potable use groundwater. However, groundwater beneath the Site is not used as a source of potable water, and the Site and surrounding area of Jersey City

are served by the municipal water supply system (United Water Company), which obtains water from sources outside of Hudson County.

A Classification Exception Area (CEA) has been established for chromium-impacted groundwater in the area of SA-5/6/7 (Shallow Zone, Deep Overburden, Bedrock Zone). In addition, the former Morris Canal was filled with salt water when it was active, and groundwater in the shallow and deeper water bearing zones contains naturally occurring elements such as aluminum, chloride, iron, sodium, and total dissolved solids (TDS) above the Class-IIA GWQS (HydroQual Inc., 2007).

2.5 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

This section includes a summary of previous investigations and remedial actions at the Site.

Initial RI (1997-1999)

The results of previous soil and groundwater investigations at Site 153 were documented in the RIR for Study Area 5 dated November 1999 (Tetratech, 1999). Initial RI field work included 21 soil borings and installation and sampling of two (2) shallow monitoring wells and one (1) deep overburden well. Soil borings were completed to depths ranging from 16 to 24 feet bgs, with samples collected at approximate 2-foot depth intervals and analyzed for total and hexavalent chromium (149 samples total). Selected samples from borings in shallow fill (12 samples) were analyzed for other parameters including Target Compound List (TCL) organics including volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), total petroleum hydrocarbons (TPH), Target Analyte List (TAL) metals, and dioxins/furans.

Monitoring wells on Site 153 sampled during the initial RI included 2 shallow wells (10 to 13 feet deep) installed within the fill above the meadow mat horizon, and one (1) deep overburden well (screened from 43 to 58 feet deep) installed below the meadow mat and above glacial till and weathered bedrock. The monitoring wells are located within the central-southern portion of the Site. Additional monitoring wells associated with other sites comprising SA-5 (Sites 079, 090, 117, and 184) are located near the eastern and northern perimeter of Site 153, and monitoring wells associated with investigations at SA-6 and SA-7 are located on the other (western) side of Route 440 relative to Site 153. Monitoring wells associated with these other sites provide data on overall groundwater delineation in the area of the Site.

Soils

RI soil boring logs indicate the presence of COPR fill described mainly as yellow-green colored material within a sand/silt soil matrix, mainly at depths between 2 to 10 feet bgs within the northern half of the Site. RI soil sample results indicate that hexavalent chromium concentrations were detected above the NJDEP soil criteria of 20 mg/kg, with the highest concentrations (on the order of 10,000 mg/kg) coincident with field observations of COPR fill within the northern portion of the Site next to Sites 90/184 (Baldwin Steel/M.I. Holdings) and Site 117 (Ryerson Steel). Lower levels of hexavalent chromium (less than 1,000 mg/kg) were detected within the southern portion of the Site. Total chromium results were less than the applicable NJDEP soil criteria of 120,000 mg/kg in effect at that time. RI soil sample results for total and hexavalent chromium are shown on **Figures 4A through 4C**.

Surface soil sample (0-2 ft bgs) results indicated that the maximum hexavalent chromium concentration was detected at sample 153-SB-A08 (13,100 mg/kg) located near the northwest perimeter of Site 117; shallow soils in this area were subsequently excavated as part of the remedial actions for Site 153 South Upper Segment. The maximum hexavalent chromium concentration detected in subsurface soils was at 153-SB-A11 (10,900 mg/kg; 2-4'), located near the southwestern corner of the Site 117. Hexavalent chromium concentrations above 20 mg/kg within the majority of the Site at depths up to 10 to 14 feet bgs, with the highest concentrations (>1,000 mg/kg) generally detected at depths between 2 to 10 feet bgs.

Other contaminants detected in soil samples above the NJDEP Residential Soil Cleanup Criteria (RDCSCC) in effect at the time of sampling included mainly polycyclic aromatic hydrocarbons (PAHs) and metals (arsenic, copper, lead, mercury, and thallium). Metals detected above the current NJDEP Residential Direct Contact Soil Remediation Standards (RDCSRS) include arsenic, lead, mercury and vanadium. Of these metals, arsenic and mercury concentrations exceed the current RDCSRS and Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS), whereas lead and vanadium concentrations are above the RDCSRS but less than the NRDCSRS. Benzene (1.3 mg/kg) was detected in subsurface soils at one sample location next to Site 184 (153-SB-A03; 8 to 10 feet bgs) slightly above the previous NJDEP RDCSCC of 1 mg/kg (below the current RDCSRS for benzene of 2 mg/kg). The RI soil sample results for non-chromium parameters are shown on **Figures 5A through 5C**.

Groundwater

Groundwater sampling results indicated that total and hexavalent chromium were detected in one of the shallow wells (153-MW-A13) above the NJDEP Groundwater Quality Standard (GWQS) of 70 µg/L for total chromium. Chromium concentrations above the GWQS were also detected in monitoring wells associated with other SA-5 sites (Sites 090 and 117) east of Site 153 and monitoring wells associated with SA-6 and SA-7 west of Site 153. Chromium was not detected above the GWQS in the monitoring well located in the southern portion of the Site (153-MW-A15) during the initial RI or in monitoring wells associated with Site 079 located north of Site 153. More recent sampling indicates total chromium was detected above the GWQS in 153-MW-A15 during some sampling rounds in unfiltered samples; however, filtered results were below and GWQS and hexavalent chromium was not detected. Groundwater data for other parameters indicate that aluminum, iron, sodium, chloride and total dissolved solids (TDS) were detected above the GWQS in monitoring well 153-MW-A15 and monitoring wells at other SA-5 sites. RI groundwater sample results are provided in **Table 6** and shown on **Figure 6**.

Regional Groundwater Investigations: 2007-2011

Investigation and delineation of chromium in shallow groundwater at SA-5 has been completed and documented as part of previous RI activities and report submittals for the sites comprising SA-5, as well as the regional groundwater investigation associated with SA-7 including the Final Groundwater Investigation Report dated February 2007 (HydroQual, 2007). Groundwater impacts within the deeper groundwater zones are being addressed by the regional remedy for SA-7 under oversight by a court-appointed Special Master. Work associated with the regional groundwater remedy is addressed in separate document submittals to the Special Master, with copies provided to the NJDEP.

Additional delineation of SA-5 shallow groundwater has also been completed as part of the SA-5 and SA-6 Consent Decree requirements and documented in a Shallow Offsite Groundwater Delineation and Remedy Proposal Report dated July 2011 (Mactec, 2011), and Shallow Groundwater Summary Report for SA-5 Site 117 dated September 2011 (Amec, 2011). The purpose of the sampling documented in these reports was to obtain current data on shallow groundwater conditions and evaluate whether further delineation or action is required for shallow groundwater. Based on data from these reports and the SA-7 regional investigation, shallow groundwater chromium impacts at the SA-5 sites are delineated and include the western portion

of Site 117, the southwest portion of Sites 090/184, and the northern portion of Site 153 abutting these sites. As previously indicated, chromium contamination impacts in the deeper groundwater zones are being addressed by the SA-7 regional groundwater investigation and remedy. The NJDEP approved the Shallow Groundwater Summary Report for SA-5 Site 117 in a letter dated July 3, 2012.

Documentation for establishment of a regional Classification Exception Area (CEA) for the sites comprising SA-5/6/7 for chromium in groundwater above the GWQS (Shallow Zone, Deep Overburden, Bedrock Zone) was submitted to the NJDEP in June 2009. The NJDEP approved the CEA in a letter dated February 16, 2012.

Remedial Actions: 2009-2011

For the purpose of site identification and remedial action, Site 153 was divided into several sections as described in the SA-5 Consent Decree: Site 153 North (next to NJCU property), Site 153 South Upper Segment (next to Site 117) and Site 153 South Lower Segment (south of Site 117).

Remedial actions at Site 153 were completed by Honeywell during 2009-2011 and documented in report submittals to the NJDEP. Remedial actions at Site 153 North were completed as part of the remedial actions by Honeywell at the NJCU property and documented in a RAR dated September 2012. Remedial actions at Site 153 South Lower and Upper Segments, referred to as interim remedial measures in the Consent Decree, were documented in report submittals to the NJDEP dated October 13, 2010 and November 26, 2013, respectively. Remedial actions completed for Site 153 are discussed in the RAR section of this report (see Section 7).

2.6 PRELIMINARY ASSESSMENT

This section presents information to address PA requirements including historical information in accordance with the NJDEP Technical Requirements and Preliminary Assessment Technical Guidance (NJDEP, 2013a). Historical information sources reviewed for the PA included:

- Aerial Photographs, Sanborn Fire Insurance Maps, Historical Topographic Maps
- New Jersey State Archives (records related to Morris Canal & Banking Company abandonment of the Morris Canal)
- Pennsylvania State Archives (records related to the Lehigh Valley Railroad)

- Regulatory Database Search provided by Environmental Data Resources (EDR)
- NJDEP Office of Information Resources Management, Bureau of Geographic Information Systems (BGIS): Historic Fill Map for Jersey City Quadrangle

Site History

Site history is summarized in this section based on information from previous RI reports and review of historical information including aerial photographs and maps. Historical aerial photographs include various years during each decade between 1930 and 1995. Historical maps include Sanborn Maps for 1898, 1912, 1950 and various years between 1979 and 1995, Hopkins Atlas Map dated 1928; and regional topographic maps from 1900, 1905, 1947, 1955, 1967, and 1981. Other historical information sources include a Topographic Survey Map of the Morris Canal Property (dated 1923) and assessment of the Morris Canal from the Final GIR for SA-7 (HydroQual, 2007). Site history documentation including a more detailed review of aerial photographs and maps is provided in **Appendix B**.

Site ownership and operational history is indicated in the following table.

Owner/Operator	Years	Site Operations
Honeywell	2007 to Present	Utility easement
City of Bayonne / BMUA	1988 to 2007	Utility easement
Conrail	1976-1988	Utility easement
Lehigh Valley Railroad (LVRR)	1924-1976	Morris Canal bed is filled
LVRR	1923	New Jersey acquires MCBC including majority of canal within Jersey City
Morris Canal Banking Company (MCBC)	1871-1923	LVRR enters lease to operate Morris Canal. Navigation on the canal ends early 1900s.
MCBC	1845-1860	Canal enlarged to 40 feet at top and 25 feet wide at bottom with a depth of 5 feet
MCBC	1836	Morris Canal extended through Jersey City
MCBC	1831-1923	Morris Canal opens from Phillipsburg to Newark, New Jersey

Review of records from the New Jersey State Archives indicates that the Morris Canal & Banking Co. (MCBC) began operation of the Morris Canal in 1831. The canal originally ran from Phillipsburg to Newark, New Jersey and was extended from the Hackensack River through Jersey City to the Hudson River in 1836. From 1845 through 1860, the canal was widened to 40 feet at the top and 25 feet at the bottom. In 1871, the Lehigh Valley Railroad (LVRR) entered into a lease with MCBC to operate the canal. In the early 1900s, navigation along the Morris Canal ended. In 1924, the State of New Jersey acquired MCBC; the Jersey City portion of the canal (with the exception of Little Basin near the Hudson River) was retained by the LVRR, the entity responsible for the disposition of the Morris Canal in Jersey City. In 1924, the Morris Canal was drained and closed, and from 1924 through 1935 the Morris Canal bed was filled.

Historical Sanborn maps dated 1898 and 1912 show the Morris Canal and tow path along the west side of the canal; the 1950 Sanborn map shows the highway on the west side of the canal identified as Highway 9W (currently Route 440). A historical topographical survey map of the Morris Canal property dated 1923 (prepared by LVRR) indicates the width of the canal as approximately 25 to 40 feet in the area of SA-5, and a 30-inch diameter water line and ash dump area west of the canal. The 1928 Hopkins Map shows the canal identified as LVRR Jersey City Branch (Old Morris Canal) and adjacent buildings to the east identified as Mallinckrodt Chemical Co., Mutual Chemical Co., Ryerson Steel, and Unexcelled Manufacturing. Based on historical aerial photos, the highway (current Route 440) is present along the west side of the former canal by 1940. Subsequent aerial photos show surrounding land increasingly more developed from the 1940s through the 1970s.

An assessment of the former Morris Canal in the SA-7 Final GIR (including reprints of engineered drawings dated 1920 and 1934) indicated that the bottom of the canal in the area of SA-5 was estimated at -0.2 feet MSL elevation which is consistent with the top of the meadow mat and corresponds to about 10-12 feet below current grade.

Environmental Records/Permits

Environmental records for the Site include previous investigation reports referenced in Section 2.5. There are no current environmental permits associated with the Site; however, future Remedial Action Permits for Soil and Groundwater are anticipated following NJDEP review of this report. Current institutional controls include:

- Deed Notice for soils recorded by Honeywell on November 30, 2010.
- Regional CEA for groundwater (Shallow, Deep Overburden and Bedrock Zones) for SA-5/6/7, approved by the NJDEP on February 16, 2012.

A modified Deed Notice has been prepared which reflects the completed remedial actions and current NJDEP model deed notice format. Following recording of the modified Deed Notice, a Remedial Action Permit Application for Soils for Site 153 will be submitted by Honeywell to the NJDEP. It is anticipated that the RA Permit for Groundwater will be submitted as part of a regional permit for the sites comprising Study Areas 5, 6 and 7, consistent with the existing regional CEA.

Hazardous Substances/Waste Types/Discharge History

COPR is the only waste type that has been documented at the Site.

Fill Material/Waste Disposal Areas

The majority of the ground surface at the Site is covered with asphalt pavement, which overlies man-emplaced fill material, including chromium-impacted fill and other material identified as historic fill. The fill ranges in thickness from approximately 8 to 14 feet (average thickness 10 feet) and generally consists of silty sand with miscellaneous debris such as ash, cinders, coal, brick, glass and gravel.

Site historical information indicates that placement of COPR likely occurred between 1924 and 1935, when the canal was filled and closed. Visual observations of soil borings and sample results indicate the presence of other types of fill consistent with the NJDEP definition of historic fill. RI data indicate PAHs and metals were detected above the NJDEP soil criteria in samples both within and outside of the COPR material. The historic fill map of the Jersey City quadrangle obtained from the NJDEP website indicates the presence of historic fill in the area of the Site (see **Appendix B-5**). The resulting fill material on the Site is thus a mixture of COPR-impacted fill and indigenous historic fill soils.

As indicated in Section 2.5, the initial RI included analysis of fill soil samples from 10 borings for non-chromium parameters including VOCs, SVOCs, pesticides/PCBs, total petroleum hydrocarbons, and metals. Non-chromium contaminants detected above the current NJDEP SRS included PAHs and metals (arsenic, lead, mercury, vanadium). Of these metals, the arsenic and mercury concentrations are above the

current RDCSRS and NRDCSRS. Lead and vanadium concentrations are above the RDCSRS but below the NRDCSRS. Arsenic and lead are typically associated with historic fill. The presence of mercury may be associated with historic fill and/or former industrial operations at sites located along the east side of the canal, e.g., former Mallinckrodt Chemical Co. (current NJCU property). The presence of vanadium may be associated with COPR and/or historic fill; however the low frequency of exceedances and concentrations (less than current NRDCSRS) indicate that detections are minor compared with hexavalent chromium.

Areas of Concern (AOCs)

Based on the PA results, there are two AOCs associated with the Site:

1. COPR fill including hexavalent chromium impacted soil and groundwater
2. Historic fill containing PAHs and other metals

Data collected as part of the initial RI and additional data presented in this report address requirements for COPR fill and historic fill. With respect to historic fill, previous NJDEP Technical Requirements for historic fill investigation specified 4 borings per acre, which would correspond to 8 borings for characterization of historic fill based on the estimated area of the Site property (3,200 feet long by 25 feet wide or about 1.9 acres). Current NJDEP guidance for historic fill investigation specifies four borings per acre to determine the extent of historic fill and a minimum of two sample locations per acre for laboratory analysis to characterize historic fill material (NJDEP, 2013b). The RI included soil sampling and analysis from 10 borings for non-chromium parameters (including contaminants typically associated with historic fill) which provides sufficient data for characterization of historic fill.

2.7 RECEPTOR EVALUATION

An initial Receptor Evaluation report for the sites comprising SA-5 (Sites 079, 090, 117, 153 and 184) was submitted to the NJDEP in February 2011 and included evaluation of land use, well search, vapor intrusion pathway and potential ecological receptors (Honeywell, 2011). There have been no substantive changes to Site conditions or receptor evaluation results since the initial Receptor Evaluation. An updated Receptor Evaluation Form is submitted with this report. Receptor Evaluation results for the Site are discussed in Section 5.6.

3.0 REMEDIAL INVESTIGATION WORK PLAN

3.1 SUMMARY OF REMEDIAL INVESTIGATION WORK PLAN

The RI activities were specified in the RIWP Addendum dated June 2005, with some modifications made as indicated in the Honeywell letter dated September 18, 2006. The work plan was approved by the NJDEP via electronic mail correspondence on April 8, 2009. The work plan included the following work elements:

- Implementation of Site-specific Health and Safety Plan (HASP);
- Obtaining Site access approvals;
- Utility mark-out and geophysical survey to locate underground utilities and verify the absence of underground utilities at proposed sampling locations;
- Soil sampling using direct-push equipment;
- Groundwater investigation including installation/sampling of temporary well points and sampling of existing monitoring wells associated with Site 153;
- Survey of soil borings and temporary well locations,
- Laboratory analysis of soil, groundwater, samples; and
- Data evaluation and preparation of report of results.

The proposed soil sampling program in the work plan specified 28 borings for additional delineation of chromium-impacted soils and fill characterization. The RI focused on the shallow fill zone and was not intended to address native soils below the fill material, based on the presence of meadow mat and native soils directly below the fill and because chromium concentrations in native soils below the fill are likely influenced by groundwater conditions. The RI sampling program was not intended to address delineation of non-chromium contaminants; however, samples were collected for non-chromium parameters to provide additional data for characterization of historic fill soils that may affect future remedial actions.

The work plan also provided for sampling of existing monitoring wells, with additional groundwater sampling points to be determined based on soil sampling results. Additional monitoring wells for groundwater delineation were not proposed

in the work plan based on data indicating that shallow chromium groundwater impacts above the GWQS in the area of Site 153 were delineated by results of existing monitoring wells (along the southern portion of the Site), and results of the SA-7 regional investigation and monitoring wells at other sites located north, east, and west of the Site. Deep groundwater zones (i.e. saturated zones below the meadow mat) are being addressed as part of the SA-7 regional groundwater investigation and remedy.

3.2 MODIFICATIONS TO THE REMEDIAL INVESTIGATION WORK PLAN

Modifications to the planned scope of work included:

- Additional soil borings to provide additional data on delineation and shallow soils for the remedial actions associated with Site 153 South.
- Additional soil borings at offsite properties to complete RI delineation requirements for the Site (properties are indicated on table farther below).
- Proposed borings within the Route 440 median strip were adjusted to be located within the Route 440 shoulder area next to the southern portion of the Site.
- Three temporary well points were completed near Danforth Avenue to evaluate groundwater impacts in the area of elevated hexavalent chromium levels (>1,000 mg/kg) detected in soils at the southern part of the Site.
- One additional shallow groundwater monitoring well (153-MW-05) was installed on property (Regnal Realty Property) east of the Site to provide additional data for SA-5 shallow groundwater delineation in accordance with the SA-5 Consent Decree. An existing shallow well on this property (identified herein as 153-MW-02) was also sampled to provide additional groundwater data east of Site 153 and south of Site 117.

The sampling program included soil borings and sampling on the following offsite properties to complete RI delineation requirements for the Site:

Property	Land Use/Description	Location Relative to Site
NJDOT Route 440 ROW	State highway (shoulder area)	West
Regnal Realty, LLC	Industrial (occupied by Langer Transport trucking facility)	East
Eden Wood Realty, LLC	Commercial (warehouse building)	East
Danforth Realty, LLC	Commercial (gas station facility)	Southeast
Mon-West Realty, LLC	Commercial (office building)	Southeast
440 Fisk Realty, LLC	Commercial (car dealership lot)	North
Water Street ROW	City street	North

During the RI, the Eden Wood Realty property owner provided access for sampling on the outside of the existing warehouse building but did not allow access for sampling inside the building. In order to determine the potential extent of contamination under the building, soil borings were completed on the north and south sides of the building to provide data for estimating potential chromium-impacted soils beneath the building footprint along the eastern perimeter of the Site. Negotiations on an access agreement are in progress between Honeywell and the property owner, for access to the building for visual inspection of the concrete floor condition and soil sampling beneath the building. It is expected that, after obtaining an access agreement, sampling beneath the building will be performed to confirm the extent of chromium-impacted soils. The results of the overall investigation for this property will be provided in an addendum to this report, estimated in early 2015, dependent on obtaining access to the property.

RI field activities and results are discussed in Sections 4 and 5, respectively.

4.0 REMEDIAL INVESTIGATION ACTIVITIES

This section presents a discussion of the RI field activities performed between 2009 and 2014. RI results are discussed in Section 5.0. The RI sampling program is summarized on **Table 1A**. Soil borings and samples are indicated in **Table 1B**. Soil boring locations are indicated on **Figure 2**.

The majority of RI field activities were performed during the period from 2009 to 2011; additional sampling was performed in 2014 to complete delineation at one of the adjacent offsite properties (Danforth Realty). RI sampling and laboratory analysis was conducted in accordance with the June 2005 RIWP Addendum and the following project documents: Master Sampling and Analysis Plan (SAP), Quality Assurance Project Plan (QAPP) and Data Management Plan (DMP) dated May 2005 (Mactec, 2005). The Master SAP and QAPP incorporated applicable requirements of the NJDEP Technical Requirements and Field Sampling Procedures Manual.

4.1 SITE MOBILIZATION AND PREPARATION

4.1.1 Health & Safety

A Site-specific HASP was implemented for the RI in accordance with requirements of applicable local, state and federal regulations including Occupational Safety and Health Administration (OSHA) regulations 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response).

4.1.2 Site Access/Permits

Honeywell owns the property comprising Site153. Site access for RI sampling activities on offsite properties was coordinated through the each property owner prior to sampling. Soil borings within the Route 440 shoulder area were conducted in accordance with a NJDOT Highway Occupancy Permit (HOP); the permit was also required as part of the remedial actions completed during 2009-2011. For soil borings within the Water Street ROW, a road opening permit was obtained from the City of Jersey City prior to sampling.

Prior to drilling of new monitoring wells, the drilling subcontractor completed the online permit applications and obtained the permits from the NJDEP Bureau of Water Allocation. The only new monitoring well associated with Site 153 was 153-

MW-05, which was installed on Regnal Realty property located east of the Site (and south of SA-5 Site 117) in accordance with SA-5 Consent Decree requirements for shallow groundwater delineation.

4.1.3 Survey of RI Locations

Site survey activities included an initial survey to locate and mark (using paint or wooden stakes) the planned RI locations in the field, and a final survey to locate any additional or adjusted sample locations following completion of the RI. Soil boring locations were determined by Amec personnel using global positioning system (GPS) equipment, and monitoring well survey work was conducted by Maser Consulting P.A. of Hamilton, New Jersey (Maser).

4.1.4 Utility Markout/Geophysical Survey

The drilling contractor arranged for a public utility mark-out prior to intrusive field activities during the RI sampling program. The utility mark-outs were supplemented with geophysical surveys to evaluate subsurface conditions in the area of each intrusive drilling location (approximately 10-foot radius).

Geophysical survey work was performed by TPI Environmental Inc. and included the use of the following equipment: ground penetrating radar, electromagnetic conductivity, magnetometer and metal detector. Information from the geophysical surveys was used to assist in locating borings prior to drilling.

4.2 SOIL INVESTIGATION

The soil investigation included soil borings and collection of samples for visual inspection, field screening, and laboratory analysis. Work was completed in several phases from 2009-2011 and 2014.

Soil borings were advanced using direct-push methods to collect samples for visual observation and field instrument screening with a photo-ionization detector (PID) and laboratory analyses. Direct-push sampling equipment was provided by B&B Drilling, Inc. of Netcong, NJ (B&B Drilling).

4.2.1 Soil Borings

The soil investigation included over 80 borings (including approximately 60 borings on offsite properties). Soil borings were advanced to various depths up to

approximately 20 feet and terminated at the top of the meadow mat, organic clay or native soils below the fill (whichever was encountered first) in accordance with the work plan. Soil boring logs are included in **Appendix D**.

Soil borings using direct-push drilling equipment were completed by advancement of a 2-inch diameter borehole and soil samples were collected continuously to the completion depth using disposable 4-foot length acetate liners. Samples were collected for laboratory analyses from selected depth intervals and biased toward the maximum evidence of contamination based on any field observations of COPR. Following completion of soil borings, the ground surface at each soil boring location was restored consistent with existing conditions at the time of drilling.

4.2.2 Field Observations/Sample Collection

Soil samples were field screened for organic vapors using a PID. Field observations indicate that fill soils are consistent with historic fill material (i.e., sand, gravel, coal, ash, cinders and brick). Soil samples were collected for field screening and laboratory analysis from selected depths (over 400 samples total). Approximately 5 to 10 samples were collected per boring for total chromium and hexavalent chromium. A limited number of samples were also analyzed for TCL SVOCs and TAL metals to provide additional data for fill characterization.

4.3 GROUNDWATER INVESTIGATION

4.3.1 Temporary Well Points

The groundwater investigation included installation and sampling of six temporary well points (TWPs) including three TWPs along the western Site perimeter (within the Route 440 shoulder) and three TWPs near the southern end of the Site. The purpose of the TWPs was to provide data on groundwater conditions at locations where elevated hexavalent chromium concentrations were detected in soil along Route 440 and near Danforth Avenue.

The TWPs were constructed of one-inch diameter schedule 40 polyvinyl chloride (PVC) casing and completed to approximate depths of 13 feet, depending on the depth to groundwater. TWP screen consisted of 10-foot long schedule 40 PVC with 0.010-inch slotted screen. Prior to sampling, TWPs were developed by pumping to remove residual fine materials from the borehole and to allow adequate water flow into the TWP. Upon completion of groundwater sampling, the TWPs were

abandoned by grouting the PVC well screen in place. TWP groundwater samples were analyzed total and hexavalent chromium (filtered and unfiltered samples). TWP field logs are included in **Appendix E.**

4.3.2 Monitoring Well Installation

The groundwater investigation included sampling of existing shallow monitoring wells (153-MW-A13, 153-MW-15), installation/sampling of one additional shallow monitoring well (153-MW-05) and sampling of one existing shallow monitoring well (153-MW-02) located on the Regnal Realty property east of the Site.

Monitoring well (153-MW-05) was installed as specified in the SA-5 Consent Decree. Honeywell voluntarily elected to sample the existing monitoring well (153-MW-02) to provide additional data in the area south of Site 117 and east of Site 153.

Well 153-MW-05 was installed utilizing a hollow stem auger (HSA) drill rig by B&B Drilling, Inc. of Netcong, New Jersey. The monitoring well was constructed using two-inch diameter schedule 40 PVC well materials and screened across the water table using 0.010-inch slotted screen (total well depth 12 feet; screened from 5 to 12 feet bgs). Following completion of the well installation, the well was developed by pumping to remove residual fine materials from the borehole and to allow adequate water flow into the well. The monitoring well was surveyed by Maser Consulting.

Copies of the well permit, well record, well log, and Form A and B well certifications are included in **Appendix E**.

4.3.3 Water Level Measurements

Two rounds of synoptic groundwater level measurements were collected from monitoring wells during the groundwater sampling activities on October 19, 2010 and April 19, 2011. Monitoring wells and water level measurements are indicated on **Table 2.** Water level measurements were collected using an electronic water level indicator. The depth of the groundwater table ranged from approximately 2.5 feet to 8.5 feet bgs. The water level measurements were used to determine groundwater elevations and prepare groundwater contour maps. Groundwater contour maps were previously submitted to NJDEP with the Shallow Offsite Groundwater Delineation and Remedy Proposal Report (Mactec, July 2011) and are provided for reference in **Appendix C.**

4.3.4 Groundwater Sampling

The RI groundwater sampling activities included four events as follows:

- Event 1 – March 16, 2010: 3 temporary well points
- Event 2 – October 19, 2010: 4 monitoring wells
- Event 3 – April 26, 2011: 2 monitoring wells
- Event 4 – September 23-26, 2011: 2 monitoring wells, 3 temporary well points

Two monitoring wells (153-MW-A13, and 153-MW-A15) were sampled in September 2011 to provide a second set of groundwater data because these wells were not sampled during the first event in April 2011.

The groundwater sampling was performed using low-flow purging and sampling methods and included measurement of the following field parameters using a water quality meter with flow-through cell: pH, temperature, dissolved oxygen (DO), oxidation/reduction potential (ORP), specific conductivity, and turbidity. Groundwater analytical parameters included total and hexavalent chromium (unfiltered samples; filtered samples using a 0.45-micron filter). Groundwater sampling field data sheets with purge/sample information and water quality parameter measurements are included in **Appendix F**.

4.4 LABORATORY ANALYSIS AND DATA VALIDATION

4.4.1 Analytical Parameters and Methods

Laboratory analyses of RI samples included the following parameters.

Soil

- Hexavalent Chromium by USEPA Method 3060A/7199
- Total Chromium by USEPA Method 6010B/6020B

Groundwater (filtered and unfiltered samples)

- Total Chromium by USEPA Method 200.8
- Hexavalent Chromium USEPA Method 7199

Samples from borings within the Water Street ROW were also analyzed for TAL metals and TCL SVOCs. All samples were analyzed by Accutest Laboratories, Dayton, New Jersey (NJ Certification No. 12129).

4.4.2 Quality Assurance/Quality Control

The sampling program included collection and analyses of the following quality assurance/quality control (QA/QC) samples: one field blank per day during the groundwater sampling programs, and duplicate samples at a frequency of five percent of the total number of soil and groundwater samples. Sampling methods and QA/QC procedures followed the requirements specified in the RIWP and Master SAP/QAPP/DMP, and applicable requirements of the NJDEP Field Sampling Procedures Manual.

Sample containers for the sampling program were provided by the analytical laboratory. Following sample collection, the sample containers were placed in coolers with ice for delivery to the laboratory. Chain-of-custody documentation was maintained through sample collection, shipment, storage, and analysis, and copies of chain-of-custody are included in the laboratory data deliverable package.

4.4.3 Data Management and Validation

Data management followed the Data Management Plan and Honeywell Standard Operating Procedures (SOPs) developed for data management, which includes procedures and requirements to provide consistent and complete collection of field data, tracking of laboratory analytical results, production of electronic data deliverables (EDDs) from certified laboratories, and entry of data into the Locus Technologies Environmental Information Management (EIM) system. The EDDs are provided on compact disc contained in **Appendix G.**

All data packages were checked for completeness, compliance with holding times and to verify that the requested analyses were conducted in accordance with the work plan. The non-conformance summary was reviewed, as well as the batch QA/QC tables. The laboratory data packages were validated following NJDEP protocols by Validata, LLC. Copies of the data validation reports are included in **Appendix H**.

4.5 SURVEYING

Soil boring coordinates were surveyed using GPS equipment by Amec personnel. Monitoring wells were surveyed by Master Consulting of Hamilton, New Jersey.

5.0 REMEDIAL INVESTIGATION RESULTS

This section presents a detailed discussion of the RI results.

5.1 TECHNICAL OVERVIEW

Soil sample results were evaluated with respect to the NJDEP soil criteria for hexavalent chromium (20 mg/kg) and total chromium (120,000 mg/kg). Soil analytical results for other parameters were compared to the NJDEP Soil Remediation Standards, including Residential Direct Contact Soil Remediation Standards (RDCSRS) and Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) (N.J.A.C. 7:26D). Groundwater analytical results were evaluated with respect to the NJDEP Groundwater Quality Standards (GWQS).

Hexavalent chromium was detected in soils above the NJDEP soil criteria of 20 mg/kg within the majority of the Site; the highest concentrations were detected at depths between 2 and 14 feet below grade coincident with field observations of COPR within the northern portion of Site 153 (next to SA-5 Sites 117 and 90/184). Soil sample results indicate that hexavalent chromium concentrations within the southern portion of Site 153 (e.g., south of Site 117) are about an order of magnitude lower compared to the northern portion Site 153 located next to Sites 117 and 090/184, e.g., levels generally below 1,000 mg/kg in the southern portion of Site 153 compared to levels greater than 10,000 mg/kg at some locations within in the portion of Site 153 next to Sites 117, 090 and 184. Non-chromium contaminants typically associated with historic fill (i.e., PAHs, metals) were detected in soil samples above the NJDEP RDCSRS and/or NJRDSRS.

Based on the RI data, the horizontal and vertical extent of hexavalent chromium in soils above the NJDEP soil criteria of 20 mg/kg has been delineated to the north, south, and along the eastern boundary of the Site. Horizontal delineation to the west (within Route 440 ROW) is not fully completed along portions of the Site due to the impracticability of conducting investigation activities within an active major roadway. Additional delineation to the west, if required, may be coordinated with future RI sampling associated with Site 187 (Route 440 Median Strip) and/or as part of future work associated with Route 440 roadway improvements. Overall soil delineation farther to the west is achieved based on data for other sites (e.g., SA-6 North) located on the west side of Route 440. Vertical delineation beneath the Site

has been established based on soil sample results indicating that hexavalent chromium was not detected above 20 mg/kg in samples collected at depths between 16 and 20 feet.

In some locations chromium-impacted soil has been delineated to portions of offsite adjacent properties (see **Illustration #3**). RI results for offsite properties are discussed in Section 5.2. Proposed remedial actions are presented in Section 6.

The extent of chromium contamination in the shallow groundwater zone above the NJDEP GWQS has been delineated based on the RI results, data from other SA-5 sites and the regional groundwater investigation associated with SA-7. Data indicate that the portion of Site 153 with chromium concentrations in groundwater above the GWQS is limited mainly to the northern portion of the Site next to Sites 090/184 and Site 117. Deep groundwater (i.e. saturated zones below the fill and meadow mat) is being addressed as part of the SA-7 regional groundwater investigation and remedy.

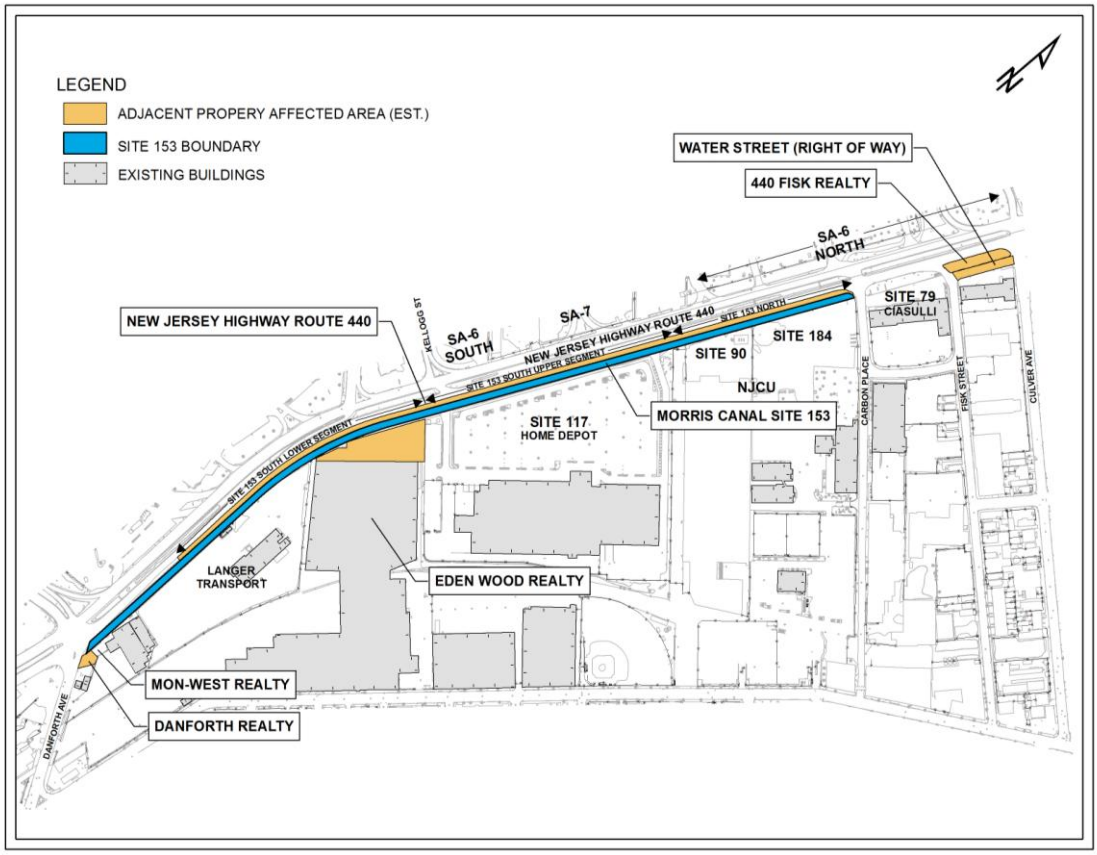

Illustration 3: Site 153 and Adjacent Properties Affected Areas

5.2 SOIL SAMPLE RESULTS - TOTAL AND HEXAVALENT CHROMIUM

The RI soil sample results for total and hexavalent chromium are summarized in **Table 3**. Soil sample results with hexavalent chromium concentrations above the NJDEP soil criteria of 20 mg/kg are shown on **Figures 4A through 4C**.

Total chromium concentrations were detected in soil samples up to approximately 89,000 mg/kg, less than the NJDEP soil criteria of 120,000 mg/kg. Hexavalent chromium concentrations ranged from not detected (ND) above the laboratory reporting limit (1 mg/kg) to 13,100 mg/kg. The highest concentrations (i.e., 1,000 mg/kg to over 10,000 mg/kg) were detected coincident with field observations of COPR fill within the northern portion of the Site next to other SA-5 sites (Site 090, 117 and 184). COPR was not observed within the southern portion of the Site, with the exception of a few soil borings at the southern end of the Site near Danforth Avenue (153-SB-029: between 6 and 10 feet bgs; 153-SB-108: 1-2 feet bgs).

Vertical delineation was completed based on the initial RI soil data indicating that hexavalent chromium was not detected above 20 mg/kg in the majority of samples collected at depths between 16 and 20 feet bgs. In some of the horizontal delineation borings along the Route 440 shoulder area, hexavalent chromium concentrations above 20 mg/kg were detected in the bottom sample at various depths between 10 to 12 feet. At some boring locations, hexavalent chromium concentrations above 20 mg/kg were detected in the bottom sample at depths between 10 to 16 feet; deeper samples were not collected at those locations due to poor recovery or to avoid penetration of the meadow mat layer. Vertical delineation at these locations can be estimated based on interpolation of soil data at depths from 16 to 20 feet from surrounding borings.

Soil delineation sampling results for offsite properties are summarized as follows (from north to south relative to Site 153):

440 Fisk Realty, LLC Property: Block 22004, Lot 1 (north of Site 153)

- Nine soil borings were completed to depths ranging from 3 to 14 feet, with 43 soil samples collected and analyzed for total and hexavalent chromium. The borings were within the "island" used for vehicle parking by the adjacent car dealership and included three locations within Block 22004, Lot 1 (153-SB-

060, 062, 063) and six locations within road ROW areas associated with the island (153-SB-061, 69, 75-78).

- Field observations indicate fill material (e.g., coal, ash, brick, glass) at depths up to about 8 to 10 feet, with native soils (e.g., clay/silt, sands) below 10 feet. Peat was encountered in some borings at depths between 10 and 13 feet.
- COPR was not observed in soil borings. Hexavalent chromium concentrations ranged from ND to 163 mg/kg, with the highest concentrations detected at depths between 6 and 10 feet.
- Delineation to the north is completed based on results of the northernmost boring (153-SB-069) indicating no exceedances of 20 mg/kg. Delineation to the south is not required due to adjacent Site 079 and Site 153 located farther south of this property.
- Delineation to the east was completed based on soil borings completed within the Water Street ROW (as discussed below).
- Delineation farther to the west is achieved based on data for SA-6 located on the west side of Route 440. If needed, additional delineation within the Route 440 ROW will be coordinated with Site 187 Route 440 Median Strip.
- Vertical delineation is achieved based on soil data at depths between 10 and 14 feet indicating results ND or below 20 mg/kg.

Water Street ROW (north of Site 153; east of 440 Fisk Realty Property)

- Six soil borings (153-SB-70 through 74, 079-SB-001) were completed to depths up to 10 feet bgs, with 26 soil samples collected and analyzed for total and hexavalent chromium. Soil samples from three borings were also analyzed for SVOCs and TAL Metals.
- COPR was not observed in soil borings. Field observations indicate fill material (e.g., coal, ash, brick, glass) at depths up to about 10 feet, with clay/silt soils below 10 feet.
- Hexavalent chromium concentrations ranged from ND to 362 mg/kg, with the highest concentrations detected at depths between 4 and 10 feet. No exceedances were detected in shallower samples (less than 4 feet bgs).
- Delineation to the east (toward car dealership) was completed based on results for easternmost borings within Water Street (153-SB-072, 073, 074).

- Vertical delineation is achieved based on soil data at depths between 8 and 10 feet and data from 440 Fisk Realty Property at depths between 10 and 14 feet indicating results ND or below 20 mg/kg.
- Several PAHs typically associated with historic fill were detected in soil samples.

Route 440 ROW (shoulder area along west side of Site)

- Fifteen soil borings (153-SB-011 to 022; 025, 026 027) were completed to depths ranging from 3 to 14 feet, with over 100 soil samples collected and analyzed for total and hexavalent chromium.
- Field observations indicate fill material (e.g., coal, ash, brick, glass, wood) at depths up to approximately 10 feet, with meadow mat and/or clay/silt soils below 10 feet.
- Hexavalent chromium concentrations ranged from ND to 1,060 mg/kg, with the highest concentrations detected at depths between 2 to 4 feet at the northern portion of the Route 440 shoulder (next to Site 153 North). COPR was observed at some locations with elevated hexavalent chromium concentrations.
- Soil sample results for other portions of the Route 440 shoulder ranged from less than 150 mg/kg (next to Site 153 Lower Segment) to less than 400 mg/kg (next to Site 153 Upper Segment).
- Delineation to the south was completed based on soil data from the southernmost boring along the Route 440 shoulder (153-SB-027).
- Further delineation to the west (within the highway lane) was not performed at this time; additional delineation to the west will be coordinated with RI sampling associated with Site 187 Route 440 Median Strip and/or during future construction work associated with Route 440 roadway improvements.
- Vertical delineation is completed based on soil sample results indicating results less than 20 mg/kg in samples from depths between 8 to 24 feet bgs and previous RI data indicating results below 20 mg/kg in the majority of samples collected at depths between 16 and 20 feet bgs.

Eden Wood Property (Block 26101, Lot 3): east of Site

- Six soil borings (153-SB-057 to 059; 079 to 081) were completed to depths ranging from 8 to 14 feet, with 27 samples collected and analyzed for total and hexavalent chromium.
- Field observations indicate fill material (e.g., coal, ash, brick, glass, gravel) at depths up to about 10 feet, with clay/silt soils below 10 feet.
- Hexavalent chromium concentrations ranged from ND to 1,520 mg/kg, with the highest concentrations detected at depths between 4 and 8 feet on the west side of the building near the perimeter of Site 153. COPR was observed in some borings near the west side of the warehouse building at depths between 4 and 6 feet (along the perimeter of Site 153).
- Delineation to the east was estimated based on data from soil borings on the south and north sides of the warehouse building (153-SB-59, 153-SB-080). Delineation in the area of the building is estimated based on data from the borings completed on either side of the building, which provides an estimate for the western portion of the building footprint that may be subject to remedial action. The estimated delineation line generally corresponds with the area of chromium-impacted soils in the western portion of adjacent Site 117 that were remediated by capping and institutional controls.
- Vertical delineation is established based on soil sample results indicating that hexavalent chromium was not detected above 20 mg/kg in samples collected at depths between 6 to 14 feet and data from other borings to the west within Site 153. At one boring next on the west side of the building (153-SB-057), samples below 8 feet could not be collected due to drilling refusal; vertical delineation in this area is based on data from surrounding borings with results below 20 mg/kg at depths between 8 and 14 feet.
- Additional soil sampling is planned to confirm the estimated extent of chromium-impacted soils beneath the building along with visual assessment of the building floor condition, pending an access agreement with the property owner.

Regnal Realty/Langer Transport Property: Block 26101, Lot 9 (east of Site)

- Ten soil borings (153-SB-001 to 010) were completed along the western perimeter of the property (just east of Site 153 property) to depths ranging

from 8 to 14 feet bgs, with 37 soil samples collected and analyzed for total and hexavalent chromium.

- Field observations indicate fill material (e.g., coal, ash, brick) at depths up to about 8 feet, with clay/silt soils below 8 feet. Peat was observed in some borings at depths between 9 and 11 feet.
- Hexavalent chromium concentrations ranged from ND to 19.6 mg/kg, less than the NJDEP soil criteria of 20 mg/kg. The majority of sample results were ND; the highest concentration was detected at 153-SB-007 (19.6 mg/kg at 10-11 feet; duplicate sample result of 15 mg/kg).

Mon-West Property: Block 26101, Lot 8 (southeast of Site)

- Three soil borings (153-SB-066 to 068) were completed to depths ranging from 12 to 13 feet, with 20 soil samples collected and analyzed for hexavalent chromium.
- Field observations indicate fill material (e.g., coal, ash, brick, glass, ceramics, wood) at depths up to about 10 feet, with clay/silt soils below 10 feet. Native soils (clayey silt) and peat was encountered at depths between 10 and 13 feet.
- Hexavalent chromium concentrations ranged from ND to 10.7J mg/kg, less than the NJDEP soil criteria of 20 mg/kg.
- Delineation to the east of Site 153 in this area is completed based on soil borings results for the Danforth Realty property.

Danforth Realty Property: Block 26101, Lot 7 (southeast of Site)

- 16 soil borings (153-SB-065; 101 to 115) were completed to depths ranging 2 to 14 feet, with approximately 70 soil samples collected and analyzed for hexavalent chromium.
- Field observations indicate fill material (e.g., coal, ash, brick, wood) at depths up to about 10 feet, with clay/silt soils below 10 feet.
- Hexavalent chromium concentrations ranged from ND to 7,000 mg/kg, with concentrations above 20 mg/kg detected at 11 locations at various depths up to approximately 8 feet below grade (beneath the paved parking lot). The majority of detections were less than 500 mg/kg; the highest concentration was detected at 153-SB-108 (7,000 mg/kg at 1.0-2.0') and COPR was observed at this location.

- Delineation to the east, north and south is completed based on data from borings on this property. Delineation to the west is completed based on data from borings within the Site 153 property. Delineation farther to the south is completed based on data from borings on the south side of Danforth Ave.
- Vertical delineation is completed based on soil data indicating results ND or below 20 mg/kg in samples collected at depths from 8 to 14 feet.

5.2.1 Compliance Averaging Results – Shallow Soils (0-2') in Portion of NJDOT ROW Next to 440 Fisk Realty Property

Compliance averaging was performed for evaluation of attainment of the NJDEP soil criteria of 20 mg/kg for hexavalent chromium within shallow soils (0.5 to 2-foot depth zone) based on non-residential land use for a portion of the NJDOT ROW area located north of Site 153 (next to 440 Fisk Realty property). Compliance averaging was performed to evaluate the use of shallow soils in conjunction with existing surface features (landscaping) as engineering control (vegetative cap). Samples in this area were not collected within the 0 to 0.5-foot depth zone since this interval consists of existing asphalt pavement and gravel sub-base in this area. Hexavalent chromium was detected above 20 mg/kg at four sample locations from 0.5 to 2.0 feetbgs: 153-SB-060 (20.1 mg/kg), 153-SB-063 (32.2 mg/kg), 153-SB-75 (29.6 mg/kg) and 153-SB-076 (55.6 mg/kg). Soil delineation was discussed in Section 5.2.

Compliance averaging was performed in accordance with NJDEP Technical Guidance for the Attainment of Remediation Standards and Site-Specific Criteria (NJDEP, 2012f). Compliance averaging included the use of nine samples (0.5 to 2-foot depth zone) from within the "island" area associated with 440 Fisk Realty property and adjacent street ROW areas, i.e., Route 440 (narrow landscaped area), Water Street and portion of Culver Avenue next to Water Street. This approach for non-residential compliance averaging is appropriate from a functional land use perspective based on the current use as a parking lot and expected future use of the property and adjacent street ROW areas, i.e., located within the designated Route 440 setback zone which is on the order of 60 feet on either side of Route 440 in the area of the Site (per Jersey City Ordinance 11-094, dated August 31, 2011).

Calculation of the arithmetic mean was used for compliance averaging based on number of sample points (less than ten samples). The results of compliance averaging indicate an average concentration of 19.3 mg/kg for hexavalent chromium

based on arithmetic mean calculation. Compliance averaging results for hexavalent chromium indicate attainment of the NJDEP soil criteria of 20 mg/kg based on non-residential land use. Compliance averaging documentation including summary table and figure is included in **Appendix L**.

5.3 SOIL SAMPLE RESULTS – OTHER PARAMETERS

Soil sampling results for VOCs, SVOCs, and metals are indicated on **Table 4**. Sample locations and contaminant concentrations above the applicable NJDEP soil criteria are shown on **Figures 5A** through **5C**. These figures include previous RI data. Soil sampling for non-chromium parameters was performed on some samples within Site 153; sampling on offsite properties focused on delineation of total and hexavalent chromium and did not include analysis for other parameters (with the exception of Water Street ROW which included sampling for PAHs and metals).

RI soil sample results for non-chromium parameters indicate that PAHs and/or metals were detected above the NJDEP SRS in the majority of samples collected for fill characterization. Field observations indicate that the fill generally consists of silty sand with other fill such as coal, ash, cinders, brick, glass and wood. The PAHs detected in soil samples are typically associated with historic fill.

Metals detected above the NJDEP SRS included arsenic, lead, mercury, and vanadium. Of these metals, arsenic and mercury concentrations are above the RDCSRS and NRDCSRS. Lead and vanadium concentrations are above the RDCSRS but below the NRDCSRS. Arsenic and lead are typically associated with historic fill. The presence of mercury may be associated with historic fill and/or former industrial operations at sites located along the east side of the former canal. Vanadium was detected above the RDCSRS but below the NRDCSRS at two locations within the portion of Site 153 next to Site 117; the presence of vanadium may be associated with COPR and/or historic fill.

5.4 GROUNDWATER INVESTIGATION RESULTS

Groundwater sample results for total chromium and hexavalent chromium are presented on **Table 6** and **Figure 6**. Groundwater sample field logs and field parameter measurements are provided in **Appendix F**.

Groundwater elevation measurements were collected during groundwater sampling events on October 19, 2010 and April 16, 2011. Groundwater elevation contour maps for these sampling events were previously submitted as part of the Offsite Shallow Groundwater Delineation Report dated July 2011, and are provided for reference in **Appendix C-3**. Shallow groundwater contour maps from the regional investigation are also included for reference in **Appendix C-2**.

Groundwater elevation measurements indicate that the direction of shallow groundwater flow is toward the north and northwest in the northern portion of the Site, and to the southwest in the southern half of the Site. Groundwater contour maps indicate that overall groundwater flow in the shallow zone is generally to the west and is influenced by near-surface features such the storm sewer along Route 440 and hydraulic barrier walls associated with remedial actions completed at SA-5 Sites 090/184 (NJCU Property) and SA-7.

Monitoring Well Sampling Results

Hexavalent and total chromium analytical results for filtered and unfiltered groundwater samples were compared to the total chromium GWQS (70 µg/L). Total chromium concentrations for unfiltered samples from monitoring well 153-MW-A13 (located within the portion of Site 153; just south of Site 117) and 153-MW-A15 (located farther south) were above the GWQS. Filtered results for total chromium for the southernmost well (153-MW-A15) were below the GWQS and hexavalent chromium was not detected in any of the samples from this well. Based on this data, we conclude that soils within the southern portion of the Site containing lower levels of hexavalent chromium are not impacting groundwater.

Field parameter results indicate pH values in the neutral range, low or non-detect DO results, and mainly negative ORP values. These data indicate reducing conditions within the shallow groundwater fill zone.

Temporary Well Point Sampling Results

Groundwater sample results for TWPs located along the Route 440 shoulder (153-TWP-001 through 153-TWP-003) contained chromium at concentrations ranging from 2,140 to 19,000 µg/L. Samples from TWPs are biased high due to sample method, turbidity and presence of sediments in the samples.

Groundwater samples results for TWPs located at the southern end of Site 153 near Danforth Avenue (153-TWP-004 through 153-TWP-006) indicate total chromium concentrations ranging from not detected (laboratory reporting limit of 4 µg/L) to 126 µg/L. Total chromium was detected above the GWQS at one location: 153-TWP-005 (126 µg/L in the unfiltered sample); however, filtered results were below the GWQS and hexavalent chromium was not detected. This location is adjacent to 153-SB-029 where elevated hexavalent chromium was detected in soils.

Sample results for TWPs 153-TWP-004 and 153-TWP-006 (located approximately 80 feet north and 100 feet south of 153-TWP-005, respectively) indicate that total chromium was not detected above the GWQS and hexavalent chromium was not detected. Based on the TWP results, chromium groundwater impacts at this location near Danforth Avenue are limited to the immediate area of impacted soils and do not extend south across Danforth Avenue.

5.5 DATA VALIDATON AND USABILITY

Laboratory analytical data was validated following NJDEP protocols by Validata, LLC. Copies of the data validation reports are included in **Appendix H**. Data validation results indicate that soil and groundwater data are acceptable for use with minor qualifications, mainly related to some sample results being qualified as estimated. Data qualifications are summarized as follows:

- Total chromium results in some soil samples were qualified as estimated due to low matrix spike recovery, elevated matrix spike duplicate recovery, laboratory duplicate precision or serial dilution precision exceedances.
- Hexavalent chromium results in some soil samples were qualified as estimated due to low matrix spike recovery, laboratory duplicate precision exceedance, and low post verification spike recovery.
- Hexavalent chromium groundwater sample results in some samples were qualified as estimated due to low post-verification spike recovery.
- Soil sample results for certain metals (e.g., antimony, copper, iron, lead, manganese, zinc) were qualified as estimated due to duplicate precision exceedance in some samples.

- SVOC results were rejected in one sample (153-SB-A04; 12-14'). Sample results for non-chromium parameters (i.e., PAHs) in some soil samples were non-detect with method detection limits above the applicable remediation standard.

Based on overall RI data and validation results, the RI soil and groundwater data is usable as qualified and is acceptable for characterization and delineation per NJDEP guidance. The data qualifications do not have a negative impact on overall project objectives.

5.6 UPDATED RECEPTOR EVALUATION

An updated Receptor Evaluation (RE) Form is included with this submittal in accordance with the TRSR requirements for RIR and RAR documents. As indicated in Section 2.7, an initial Receptor Evaluation was completed in February 2011. There have been no substantive changes to Site conditions since the initial Receptor Evaluation. A summary of the updated Receptor Evaluation results follows:

Land Use

Site description and land use were discussed in Section 2. Additional information regarding land use in the area of the Site is provided with the updated RE, including land use maps and a table identifying properties within 200 feet of the Site boundary (i.e., mainly commercial uses along Route 440). The Site is located within the Bayfront Redevelopment Area, which includes future mixed uses (retail, residential, open space) on the west side of Route 440 (referred to as Bayfront 1). The NJCU West Campus development, located east of the Site, is planned for academic facilities, student housing and mixed use/residential. The western portion of the NJCU property is planned for commercial/retail within 200 feet of Site 153.

The Site is also within the Route 440 setback zone (on the order of 60 feet on either side of the current Route 440 roadway) where future road improvements are planned by the NJDOT to expand Route 440 into a multilane boulevard to support the Bayfront Redevelopment Plan.

Groundwater

Groundwater in the area of the Site is classified by the NJDEP as Class II-A potable use groundwater (N.J.A.C. 7:9C, *et seq.*). Groundwater beneath the Site is not used as a source of potable water. The City of Jersey City is served by the municipal

water supply system (United Water Company), which obtains water from which obtains water from surface water reservoir sources in Morris County, New Jersey.

Previous well searches were conducted as part of the initial RI (TetraTech, 1999), the SA-7 regional investigation (HydoQual, 2007), and the initial Receptor Evaluation (Mactec, 2011). As part of the updated Receptor Evaluation, an updated well search was performed by checking the NJDEP online database for water supply wells within one mile of the site. Well search results indicate that three industrial water supply wells were identified within one mile of the Site including one well identified within 0.5-mile of the Site and two wells between 0.5-mile and 1-mile of the Site. The nearest well is associated with a commercial car wash approximately 1,900 feet to the east and 150 feet deep. Groundwater impacts at the Site would not be expected to impact these wells based on their distance relative to the Site.

Vapor Intrusion

This report applies to chromium-impacted fill related contamination. VOCs are the primary contaminants of concern with respect to the VI pathway; however, VOCs are not contaminants of concern for the Site. Chromium is not a contaminant of concern for the groundwater to VI pathway because it does not readily volatilize from groundwater, thus the vapor intrusion pathway at the Site is not applicable. In addition, Site 153 consists of a sewer easement; there are no buildings and future land use would not include building development. Therefore, since the VI pathway is not applicable to this Site, it was not assessed and will not be further evaluated as part of the chromium-related investigation for the Site.

Ecological Evaluation

A Baseline Ecological Evaluation (BEE) was performed and documented in the November 1999 RIR. RI data was reviewed with respect to contaminants of potential ecological concern (COPECs) and potential migration pathways to environmentally sensitive natural resources. RI data indicate that COPECs detected in soil and groundwater included hexavalent chromium and historic fill related contaminants such as PAHs and metals. No environmentally sensitive areas are present on or immediately adjacent to the Site. Evaluation of Site conditions and potential migration pathways (i.e., surface runoff, groundwater discharge to surface water) indicate that potential exposure pathways are incomplete and that there is little risk of ecological impact.

The BEE indicated that additional study may be needed to evaluate the significance of offsite migration of contaminated groundwater to the Hackensack River (approximately 1,200 feet west of SA-5), and that evaluation should take place as part of the remedial investigation for SA-6 due to its immediate proximity to the Hackensack River. Remedial actions to mitigate impacts to the Hackensack River are being addressed as part of the SA-7 regional investigation and remedy.

Sediment impacts in the area of SA-6 and SA-7 are being addressed as part of the SA-7 regional investigation and remedy. Honeywell has completed an extensive ecological assessment in the area of SA-6 and SA-7 as part of the SA-7 regional investigation; a series of reports including the Final Sediment Investigation Report and the Sediment Remedial Alternatives Assessment have been provided to the NJDEP and the Special Master in the SA-7 litigation. Sediment remedial actions were completed during 2012-2013.

Based on the Receptor Evaluation results, no further ecological investigation for the Site is required.

5.7 SUMMARY OF RI FINDINGS AND RECOMMENDATIONS

This section presents findings and recommendations from the RI results:

RI Findings - Soils

- The overall RI included over 100 soil borings and analysis of over 550 samples for characterization and delineation of chromium-impacted soils at Site 153 (Former Morris Canal). Soil borings included 21 borings during the initial RI in the late 1990s and over 80 borings during additional investigation and delineation activities between 2009 and 2014. Chromium contamination at the Site is associated with historical deposition of COPR fill, which likely occurred during filling and closure of the former Morris Canal from 1924 to1935.
- The horizontal and vertical extent of hexavalent chromium in soils above the NJDEP soil criteria of 20 mg/kg has been delineated to the north, south, and east of the Site. In some locations chromium-impacted soil is delineated into portions of the following offsite commercial properties and roadway areas: Danforth Realty, LLC; Eden Wood Realty, LLC; 440 Fisk Realty, LLC; Route 440 ROW (shoulder area); and City of Jersey City ROW areas proximate to the Site.

Chromium concentrations on adjacent properties are substantially lower compared to soil data from within the Site 153 property boundary.

- Horizontal delineation along the western Site boundary (within Route 440 ROW) is not fully completed due to the impracticability of conducting such work within an active roadway; additional delineation to the west may be coordinated with future RI sampling associated with Site 187 Route 440 Median Strip and/or during future work associated with Route 440 roadway improvements. From a study area-wide perspective, soil delineation farther to the west is achieved based on data for other sites (SA-6, SA-7) located on the west side of Route 440.

  Delineation to the east in the area of the warehouse building (Eden Wood Property) is estimated based on data from soil borings on the south and north sides of the building. Additional work is planned to be conducted to confirm the delineation for this property. This is expected to take place following the completion of access negotiations with the property owner.

- The highest concentrations of hexavalent chromium (i.e., 1,000 mg/kg to over 10,000 mg/kg) were detected at various depths between approximately 2 and 12 feet, coincident with field observations of COPR-impacted fill within the northern portion of the Site next to other SA-5 sites (Site 090, 117 and 184). Data from soil samples collected from beneath the Route 440 shoulder indicate substantially lower concentrations compared to soil data from within the Site boundary.

- Hexavalent chromium concentrations within the southern portion of Site 153 (south of other SA-5 sites) are about an order of magnitude lower (e.g., less than 1,000 mg/kg) compared to the northern portion next to other SA-5 sites. COPR was generally not observed within the southern portion of the Site, with the exception of a few locations in the southern part of the Site near Danforth Ave.

- Vertical delineation is achieved based on soil data indicating that hexavalent chromium was not detected above 20 mg/kg in the majority of samples collected at depths between 16 to 20 feet bgs (i.e., below the meadow mat). There were a few detections above 20 mg/kg at depths below 16 feet; however hexavalent chromium concentrations in native soils below the fill may be influenced by groundwater conditions. Remedial actions below the fill unit are being addressed as part of the SA-7 regional groundwater remedy.

- RI field observations indicate other types of fill at the Site including historic fill as defined by the NJDEP both within and outside the areas of COPR fill. The historic fill consists of sand, gravel, coal cinders, ash, brick, glass and wood. Samples collected for fill characterization indicate the presence of PAHs and metals typically associated with historic fill.
- Metals detected in fill samples above the NJDEP SRS included arsenic, lead, mercury, and vanadium. Arsenic and mercury concentrations were detected above the RDCSRS and NRDCSRS. Lead and vanadium were detected above the RDCSRS but below the NRDCSRS. Arsenic and lead are typically associated with historic fill. Mercury may be associated with historic fill and/or former industrial operations at sites located along the east side of the former canal. Vanadium may be associated with COPR and/or historic fill. The low frequency of detections and concentrations of these metals indicate that historic fill impacts are relatively minor compared with chromium-impacted fill.
- Hexavalent chromium was not detected above 20 mg/kg in soil samples collected from the Regnal Realty, LLC (Langer Transport) property and Danforth Realty, LLC property. Based on the RI results, no further investigation or action is required for these properties.

RI Findings - Groundwater

- The extent of chromium impacts in groundwater above the NJDEP GWQS has been determined based on the RI results and data from other sites (e.g., other SA-5 sites, SA-6 sites) and the SA-7 regional investigation. Data indicate that the portion of Site 153 with groundwater chromium concentrations above the GWQS is limited mainly to the northern portion of the Site next to Sites 090/184 and Site 117 corresponding to the area of COPR fill and elevated hexavalent chromium concentrations in soils (i.e., >1,000 mg/kg).
- Shallow groundwater impacts have been delineated based on data from monitoring wells on Site 153, monitoring wells at other sites associated with SA-5 and SA-6 and the SA-7 regional investigation. Monitoring wells at other SA-5 sites (e.g., Sites 079, 090, 117, 184) provide data for groundwater delineation to the north and east (upgradient/sidegradient); monitoring wells at SA-6 provide data to the west (downgradient); and Site monitoring wells 153-MW-A13 and 153-MW-A15 provide data along the southern portion of Site 153 (sidegradient/downgradient). Monitoring wells at SA-6 and SA-7 provide data for delineation to the west (downgradient). Groundwater sample results for the

southernmost well (153-MW-A15) indicate that soils in the southern portion of the Site are not impacting groundwater quality based on total chromium filtered results below the GWQS and non-detect results for hexavalent chromium.

- Shallow groundwater data for the Site and other chromium-impacted fill sites indicate that chromium groundwater impacts are limited to the area of COPR impacted fill and do not migrate laterally due to reducing conditions in surrounding historic fill, which favor the natural reduction of hexavalent chromium.
- Deeper groundwater zones are being addressed as part of the SA-7 regional investigation and remedy. Shallow groundwater impacts at Site 153 are at low concentrations and localized with respect to soil impacts when compared to the regional groundwater issues associated with hexavalent chromium. The regional groundwater extraction and treatment system and mass removal treatment program will address hexavalent chromium that may migrate from shallow to deeper zones.
- Groundwater data for other parameters indicate that aluminum, iron, sodium, chloride and total dissolved solids were detected in shallow groundwater above the GWQS. Site-specific and regional data indicate that the natural quality of the groundwater beneath SA-5 is not suitable for conversion to potable uses. Data for sites within SA-5/6/7 indicate that chloride and TDS levels in groundwater exceed the GWQS for these compounds on a regional basis. In some cases, the concentrations exceed the criteria for Class IIIB groundwater designation, suggesting impacts from saline surface water (Newark Bay).

Recommendations

Based on the RI findings, soil and groundwater impacts at the Site have been adequately characterized and delineated with respect to the NJDEP Technical Requirements and guidance for RI completion, and sufficient data exists to proceed with remedial actions. Proposed remedial actions for offsite properties are discussed in Section 6. The completed remedial actions at Site 153 are discussed in Section 7.

6.0 REMEDIAL ACTION WORK PLAN

This RAWP has been prepared in accordance with the reporting format outlined in the New Jersey Technical Requirements for Site Remediation, N.J.A.C. 7:26E-5.5. Honeywell will complete the remediation in accordance with the criteria provided in N.J.A.C. 7:26E-5 and all appropriate subsections.

Remedial actions were evaluated based on the RI data, remedial action objectives, land use and regulatory requirements including the NJDEP Chromium Directive (Policy) as outlined in the NJDEP Memorandum dated February 8, 2007, as well as the Sewer Protocol in Appendix B of the September 2011 Consent Judgment between NJDEP and Honeywell. The Policy addresses remedial action requirements for chromium based on land use. The Sewer Protocol addresses remedial actions for sewer sites.

6.1 REMEDIAL ACTION OBJECTIVES AND CRITERIA/STANDARDS

Remedial action objectives include the protection of human health and the environment, minimizing impacts to current operations and the local community, and compliance with the NJDEP Chromium Policy and other applicable regulatory requirements. Specific remedial action objectives are indicated below:

- Prevent exposure to COPR and/or soils containing hexavalent chromium above the NJDEP soil policy guideline of 20 mg/kg.
- Prevent exposure to groundwater chromium concentrations above the NJDEP GWQS of 70 µg/L.
- Mitigate the potential for surface water infiltration and leaching of contaminants from fill soils (vadose zone) to groundwater.
- For implementation of engineering controls (capping), mitigate the potential for upward migration of dissolved contaminants in groundwater (i.e., hexavalent chromium) through capillary action (i.e., capillary rise).

The primary drivers for soil and groundwater remediation include the NJDEP soil criteria for hexavalent chromium of 20 mg/kg pursuant to current NJDEP Policy and the NJDEP GWQS of 70 µg/L based on total chromium.

Remedial action plans for Site 153 are summarized in Section 6.2. Proposed remedial actions for offsite properties are presented in Section 6.3.

6.2 SITE 153 MORRIS CANAL

Site 153 consists of a utility easement and is designated as a sewer site in the Consent Judgment. Remedial actions at Site 153 were completed by Honeywell during 2009 to 2011 in accordance with the following work plans submitted to the NJDEP:

- Site 153 North: RAWP for Former Baldwin Steel (Site 090) and M.I. Holdings (Site 184), and Former Morris Canal (Site 153) Abutting Sites 090/184, dated July 2007
- Site 153 South Lower Segment: Interim Remedial Action Plan, October 15, 2009
- Site 153 South Upper Segment: Interim Remedial Action Plan, May 21, 2010

The completed remedial actions included a combination of excavation and implementation of engineering controls (capping) and institutional controls (deed notice), consistent with requirements of the Sewer Protocol.

Remedial actions at Site 153 North were completed as part of the remedial actions performed at the NJCU property and documented in a RAR dated September 2012 (Amec, 2012). Remedial actions at Site 153 South Lower and Upper Segments, referred to as interim remedial measures in the Consent Decree, were documented in report submittals to the NJDEP dated October 13, 2010 and November 26, 2013, respectively (Honeywell 2010; 2013). While the remedial actions for Site 153 were implemented as interim remedial measures, they are consistent with the requirements of the Sewer Protocol, and thus constitute the final remedial actions for the Site (subject to the provisions of Paragraph 71 of the Consent Decree, as previously noted on page ES-4, footnote 1).

A Remedial Action Report for the Site is provided in Section 7. The RAR section also addresses remedial action requirements for groundwater and post-remediation monitoring and reporting requirements for the Site.

6.3 OFFSITE PROPERTIES

This section presents proposed remedial actions for chromium at the following offsite adjacent properties, where RI results for Site 153 indicate that chromium-impacted soils have been delineated to extend onto a portion of the properties:

Property	Block/Lot	Land Use/Description
Danforth Realty, LLC	Block 26101, Lot 7	Commercial (gas station facility)
440 Fisk Realty, LLC[1]	Block 22004, Lot 1	Commercial (car dealership lot)
NJDOT Route 440 ROW	Not applicable	State highway (shoulder area)
City of Jersey City ROW	Not applicable	City street including portion of Water Street, Fisk Street, Carbon Place and Danforth Avenue

[1] A separate RAWP is being submitted for 440 Fisk Realty, LLC property

The proposed remedial actions are based on review of RI data, land use, NJDEP Chromium Policy, and Technical Requirements for Site Remediation and applicable guidance. The proposed remedial actions include implementation of engineering controls (capping) and institutional controls (Deed Notices). Focused excavation of shallow soils is proposed on portions of some properties in conjunction with implementation of engineering controls. The use of engineering controls (capping) is consistent with the NJDEP Technical Guidance of Capping of Sites Undergoing Remediation (NJDEP, 2014). For road ROW areas which contain sewer lines and/or other utilities, the proposed remedial actions include use of the existing paved road surface as engineering control (cap) consistent with the Sewer Protocol.

6.3.1 Danforth Realty, LLC Property (Block 26101, Lot 7)

Chromium-impacted soils were detected within a portion of the property. Proposed remedial actions include a combination of soil excavation and implementation of engineering controls (cap) and institutional controls (deed notice), as follows:

1. Perform excavation and off-site disposal of hexavalent chromium in shallow soils. The excavation will encompass an area of approximately 3,100 square feet and 1 to 2 feet deep (approx. 150 cubic yards) as shown on **Figure 7A**. Most of this area will be excavated to a depth of 1 foot, and part of the area will be excavated to a depth of 2 feet to remove COPR and higher concentrations of hexavalent

chromium (>1,000 mg/kg) detected in shallow soils. Soil excavation will include the following activities:

- Collect and analyze pre-excavation waste characterization samples per disposal facility requirements.
- Excavate hexavalent chromium impacted soil up to a depth of 2 feet.
- Direct load the material to off-site disposal facility. All soils will be transported in accordance with USDOT regulations, applicable federal and state waste transportation regulations, including requirements for containing, labeling, packaging, and transporting soil.
- Backfill the excavation to grade with certified clean fill underlain by a demarcation layer and restore the area consistent with pre-remediation conditions.

2. Asphalt Cap: Following soil excavation, the area will be restored consistent with pre-remediation conditions including asphalt pavement (approximately 2,500 SF) over most of the area and a small area of vegetative lawn cover (approximately 500 SF). Asphalt paving will consist of placement of approximately 6 inches dense graded aggregate and asphalt pavement (4 inches base course; 2 inches surface course).

3. Establishment of Institutional Control - Deed Notice for hexavalent chromium exceeding 20 mg/kg remaining in soils beneath the engineering controls.

The proposed remedial actions will mitigate contact with contaminated soils and will be implemented in conjunction with institutional controls (Deed Notice) to protect the cap and prevent unauthorized disturbance of the cap. Details of the engineering controls are provided in the draft deed notice included in **Appendix K-1**.

6.3.2 NJ State Highway Route 440 (NJDOT Right-of-Way)

For a portion of the Route 440 ROW (shoulder area) associated with Site 153, the existing asphalt pavement (road surface) will serve as the engineering control (cap), consistent with sewer protocol. This includes the area along the western perimeter of Site 153 between Danforth Avenue and Carbon Place, and the area between Carbon Place and Culver Avenue (next to Site 079 and 440 Fisk Realty property), as shown on **Figure 7B**. The asphalt pavement is approximately 0.5 to 1.0 feet thick (including asphalt pavement and gravel sub-base). Existing subsurface utilities

along this portion of Route 440 include sewer, water, electric and gas lines. Details of the engineering controls are provided in the draft deed notice in **Appendix K-2**.

For the portion of the Route 440 ROW within the narrow landscaped area next to 440 Fisk Realty property (between Fisk Street and Culver Avenue), compliance averaging for the top 2 feet of soils is proposed in conjunction with existing surface features as the engineering control (cap) and institutional control (deed notice) for soils below 2 feet. As indicated in Section 5.5.1, compliance averaging indicates attainment of the NJDEP soil criteria of 20 mg/kg for hexavalent chromium for the top 2 feet of soils within the entire island area (car dealership parking lot) between Water Street and Route 440 based on non-residential land use.

6.3.3 City of Jersey City – Portion of Water Street, Fisk Street, Carbon Place and Danforth Avenue (Right-of-Way Areas)

Water Street ROW

Soil sample results for the Water Street ROW area indicate that shallow soils (0 to 3 feet bgs) are not impacted above the NJDEP soil criteria of 20 mg/kg for hexavalent chromium. Chromium-impacted soils were detected beneath a portion of Water Street at depths between 4 and 10 feet below grade. The existing asphalt pavement (road surface) and top 3 feet of non-impacted soils below the pavement will serve as the engineering control (cap). Use of the road surface pavement as engineering control (cap) is consistent with the sewer protocol. Existing utilities within Water Street include sewer and water lines.

Proposed remedial actions for chromium-impacted soils within the Water Street ROW are as follows:

1. Asphalt Pavement and Existing Soil Cover Beneath Pavement: Existing engineered barrier (cap) consists of asphalt pavement (approximately 4 inches thick) and buffer layer of 3 feet of soils below the existing pavement that are not impacted with hexavalent chromium above the NJDEP soil criteria of 20 mg/kg.

2. Establishment of Institutional Control - Deed Notice for hexavalent chromium exceeding 20 mg/kg in soils beneath the engineering controls.

Portion of Fisk Street, Carbon Place and Danforth Avenue

Proposed remedial actions for the following street ROW areas include the use of existing asphalt pavement (road surface) as engineering control (cap) in conjunction with an institutional control (Deed Notice):

- Portion of Fisk Street near Water Street and Route 440
- Portion of Carbon Place between Site 153 and Site 079
- Portion Danforth Avenue at southern end of Site 153

These areas are shown on **Figure 7C**. Soil samples were not collected within these areas; however, chromium-impacted soils may exist in these areas based on RI soil data from adjacent properties. Existing subsurface utilities in these areas include sewer, water, electric and/or gas lines. Use of the road surface pavement as engineering control (cap) is consistent with the sewer protocol. Details of the engineering controls are provided in the draft deed notice in **Appendix K-3**.

6.3.4 440 Fisk Realty Property (Block 22004, Lot 1)

The proposed remedial actions for the 440 Fisk Realty property are addressed in a separate RAWP submittal to the NJDEP and are summarized here for reference. Proposed remedial actions include the use of existing asphalt pavement as engineering control (cap) and establishment of an institutional control (deed notice). As part of the proposed remedial actions, a small area of existing stone pavers will be replaced with asphalt pavement as an engineering control. The Deed Notice will address hexavalent chromium in soils above 20 mg/kg as well as non-chromium contaminants associated with historic fill. Data regarding non-chromium contaminants is being provided by the property owner for inclusion as part of the Deed Notice for this property.

Capillary Rise Evaluation

The potential for upward migration of dissolved-phased contaminants such as hexavalent chromium through capillary action (i.e., capillary rise) was evaluated with respect to implementation of capping remedies. Based on the RI data and remedial actions, upward migration of hexavalent chromium via capillary rise is not expected to occur based on the following:

- No indication of upward migration of hexavalent chromium via capillary rise (i.e., as may be indicated by chromium "blooms" at the ground surface) has

been observed.

- Remedial actions completed at Site 153 include excavation of shallow soils on portions of the Site and installation of engineering controls (cap) consisting of clean granular fill and/or asphalt pavement within Site 153 South and multi-layered cap system at Site 153 North. The remedial actions will mitigate the potential for capillary rise.
- Soil sampling data for offsite properties indicate substantially lower levels of hexavalent chromium compared to Site 153. The proposed remedial actions on offsite properties include excavation of shallow soils on portions of properties and implementation of engineering controls (cap) consisting of clean granular fill and/or asphalt pavement, which will mitigate the potential for capillary rise.

6.4 REGULATORY APPROVALS/PERMITS

The following regulatory approvals/permits have been identified for implementation of remedial actions:

- NJDEP approval of this RAWP
- City of Jersey City construction permit and traffic control permit for work near or within road right-of-way areas
- City of Jersey City MUA approval for work near sewer lines
- NJDOT Grading Plan / Highway Occupancy Permit for work near Route 440

Local Soil Erosion and Sediment Control Plan approval is not required based on the fact that the proposed areas of soil disturbance/excavation on each of the individual properties, is less than 5,000 square feet.

Other regulatory requirements include public notification in accordance with the NJDEP Administrative Requirements for the Remediation of Contaminated Sites (ARRCS) as follows.

- Updated fact sheet for RI completion: Following NJDEP review and approval of the report and concurrence regarding completion of the RI, Honeywell will publish an updated fact sheet for public notification of completion of the RI.

- Public notification prior to remediation: Prior to field activities associated with remedial actions on offsite properties, Honeywell will install a public notice sign or send notification letters to property owners/residents within 200 feet of the site.

Documentation regarding fact sheet publication will be provided to the NJDEP in the next remedial phase document submittal, i.e., Remedial Action Report.

6.5 FILL USE PLAN/SITE RESTORATION PLAN

Fill Use Plan

As discussed in Section 6.2, approximately 150 cubic yards of clean fill will be installed to backfill excavation areas or as a barrier/buffer layer as part of the engineering controls (cap areas). Pursuant to N.J.A.C. 7:26E-5.5 (NJDEP, 2012a), a fill use plan is required because clean fill will be used to backfill excavation areas as part of the remedial actions.

Backfilling of excavation areas will be performed using imported clean fill, which will be verified as meeting the NJDEP Soil Remediation Standards prior to being accepted for transport to the Site. Placement of backfill will be in accordance with RA contractor construction bid specifications to be prepared prior to implementation of remedial actions. Use of imported clean fill will follow applicable requirements in Appendix B of the NJDEP Alternative and Clean Fill Guidance for Site Remediation Program Sites dated December 29, 2011 (NJDEP, 2011). Clean fill documentation will be provided with the Remedial Action Report (RAR).

Site Restoration Plan

Remediation areas will be restored in manner consistent with existing pre-remediation conditions, i.e., asphalt paving, concrete, landscaped or vegetative cover. Site restoration details will be specified in RA contractor construction bid specifications to be prepared for implementation of remedial actions.

6.6 HEALTH AND SAFETY/PERIMETER AIR MONITORING

A HASP will be prepared and implemented in accordance with OSHA requirements. Prior to mobilization, the RA Contractor selected to perform the remedial construction activities will prepare a Site-specific HASP for the remedial action.

As part of the Health and Safety monitoring to be conducted during remediation involving excavation of contaminated soils, perimeter air monitoring will be implemented and include the use of field monitoring equipment to monitor dust levels during remediation activities for the protection of neighboring properties. The NJDEP has identified a Jersey City particulate matter criterion based on National Ambient Air Quality Standard (NAAQS) for respirable particulate matter, i.e., less than 10 microns (PM-10) of 150 micrograms per cubic meter ($\mu g/m^{3)}$ (24 hour average) (USEPA 40 CFR Part 50). This value was extrapolated to an 8-hour average and adjusted for Jersey City ambient PM-10 background, resulting in a PM-10 target parameter of 339 $\mu g/m^3$, which will be used as the respirable particulate matter action level. The particulate matter is measured in the field and exceedance of 339 $\mu g/m^3$ will trigger notification of the Site Health and Safety Officer to engage in source investigation and implementation of engineering controls (if necessary) to address protection of the neighboring properties.

A master Perimeter Air Monitoring Plan (PAMP) has been developed for short duration (<365 days) remedial actions. The proposed remedial action field activities are expected to be completed within a time period of less than 30 days following field mobilization. It is anticipated that a minimum of two (2) perimeter monitoring locations will be needed for the proposed remedial actions. The primary concern is hexavalent chromium, which may become airborne from the generation of dust. The PAMP describes monitoring requirements including air monitoring equipment, perimeter air monitoring stations, action levels, and air monitoring procedures to be followed during the remedial action. The master PAMP was submitted to the NJDEP for review as part of the RAWP for Site 67 (Lot 41) dated July 2014. The PAMP will be modified/updated if needed for the proposed remedial actions.

6.7 EVALUATION OF REMEDIAL ACTION EFFECTIVENESS

Remedial action effectiveness will be evaluated based on existing RI data and any additional data collected prior to or during the remedial actions, which may include pre-remediation design sampling or other post-remediation sampling or monitoring.

For the proposed soil excavation areas, existing RI soil sampling results will be used to pre-determine the depths and limits of excavation. Pre-design sampling or post-excavation may be performed to provide additional data to refine the limits of excavation. Existing RI data in conjunction with any additional pre-design or post-

excavation data will be used to document post-remediation compliance status for the proposed excavation areas. Sampling parameters will include total and hexavalent chromium. In addition, if COPR is observed during soil excavation activities, then the excavation area will be extended to remove COPR, to the extent practical. Post-excavation sampling is not planned because the proposed soil excavation areas involve shallow soils based on existing RI data and are being performed in conjunction with engineering controls and institutional controls for deeper soils.

Following completion of remedial actions, evaluation of protectiveness will be performed by conducting periodic inspections of engineering controls and documented by submittal of Remedial Action Protectiveness Certification Reports to the NJDEP on a biennial basis in accordance with a RA Soil Permit.

6.8 POST-REMEDIATION ACTIVITIES

6.8.1 Engineering and Institutional Controls

Engineering Controls

Engineering controls will be monitored periodically to document that the integrity of the engineering controls (cap) is maintained and that the use of the property does not change in a manner that may create the potential for exposure to soil contaminants. The frequency of inspections will be specified in the RA Soil Permit Application, to be submitted to the NJDEP following recording of Deed Notice documents. Remedial Action Protectiveness Certification Reports will be submitted to the NJDEP every two years following NJDEP issuance of the RA Soil Permit.

Institutional Controls

Draft Deed Notices for offsite properties are included in **Appendix K.** The Deed Notices address soils with hexavalent chromium concentrations greater than 20 mg/kg and include exhibits showing the restricted areas, engineering controls, and specify measures to be taken in the event of disturbance of engineering controls. Following completion of remedial actions, final Deed Notices will be prepared by Honeywell and transmitted to the following property owners for recording with the Hudson County Register's Office: Eden Wood Realty and Danforth Realty.

Deed Notices for properties that do not have a deed such as State, county or local roadways (NJDOT Route 440 shoulder, City of Jersey City ROW areas) will not be

recorded with the Hudson County Register but will be submitted to the following entities to serve as Notice in Lieu of a Deed Notice:

- NJDOT
- City of Jersey City - Road Department; Department of Public Works
- Utility companies with an easement within the roadway

Future road expansion and improvements are anticipated to expand Route 440 into a multilane boulevard in the area of the Site. The road expansion may trigger Honeywell's obligation to engage in additional remediation of chromium contaminated soils at Site 153 pursuant to paragraph 71 of the Consent Decree (s*ee* page ES-4, footnote 1) and may require future modification of the engineering controls and deed notices.

Refer to Section 7.2 for the Deed Notice applicable to the Morris Canal Site property.

Classification Exception Area

A regional CEA for groundwater was submitted in 2009 and approved by NJDEP in February 2012. The regional CEA addresses chromium groundwater impacts above the NJDEP GWQS in the area of SA-5/6/7. Refer to Section 7.2 for further information regarding the CEA and submittal of a RA Permit Application for Groundwater.

6.8.2 Remedial Action Soil Permit

Following recording of the final Deed Notices with the Hudson County Register, Honeywell will prepare and submit RA Soil Permit Applications to the NJDEP, as applicable. Certification as to the protectiveness of the engineering and institutional will be conducted on a biennial basis (every 2 years). Biennial certification and reporting for the chromium remedial actions will be completed by Honeywell.

6.9 REMEDIAL ACTION COST ESTIMATE

The estimated cost for the proposed remedial actions is approximately $300,000.

6.10 REMEDIAL ACTION SCHEDULE

Honeywell expects to initiate remediation during 2015 and estimates about one to three months to complete after field mobilization. The remedial action schedule is

dependent on NJDEP approval of the RAWP, obtaining applicable permits, Site access and coordination of work with offsite owner/operators.

Following completion of remedial actions on offsite properties, a Remedial Action Report will be submitted to document completion of remediation actions in accordance with the Technical Requirements.

7.0 REMEDIAL ACTION REPORT

This section presents a discussion of the remedial actions completed at Site 153 Morris Canal to address the NJDEP Technical Requirements for remedial action reports (N.J.A.C 7:26E-5.7). The remedial actions were completed by Honeywell during 2009-2011 and documented in report submittals to the NJDEP as follows.

- Site 153 North (next to NJCU property): Remedial actions were completed as part of the remedial actions performed by Honeywell at the NJCU property and documented in a RAR dated March 2012; revised September 2012. The chromium remedy for this site as a whole, including Site 153 North, received a No Further Action from NJDEP on May 7, 2012.

- Site 153 South (south of NJCU property): Remedial actions at Site 153 South Lower and Upper Segments, referred to as interim remedial measures in the Consent Decree, were documented in report submittals to the NJDEP dated October 13, 2010 and November 26, 2013, respectively. These actions were implemented in accordance with the Sewer Protocol, and Honeywell is seeking approval for these remedial actions as the final remedies for the Site. However, as per the requirements of the Sewer Protocol, in the event of sewer repair or replacement at Site 153, which is expected to occur from time to time to maintain efficient operations, Honeywell is required to engage in additional remediation of chromium contaminated soils at Site 153. *See also Paragraph 71 of the Consent Decree Regarding Sites 79 and 153 South (Consent Decree) in Jersey City Municipal Utilities Authority v. Honeywell, Jersey City Incinerator Authority v. Honeywell, and Hackensack Riverkeeper v. Honeywell, 05-5955 (consolidated), (D. NJ) (entered January 2, 2010) (ECF No. 301).*

The above-referenced reports contain documentation of the completed remedial actions in accordance with the Technical Requirements including documentation on soil disposal, backfill, site restoration and as-built drawings. The RAR for the chromium remedy at NJCU included documentation on remedial actions completed at Site 153 North (Amec, 2012). A copy of the reports and as-built drawings for Site 153 South are provided for reference in **Appendix I** (on compact disk).

7.1 REMEDIAL ACTIONS COMPLETED

A description of the completed remedial actions follows:

Site 153 North

Remedial actions at Site 153 North including engineering controls consisting of asphalt pavement in the western portion (above and west of the BMUA force main sewer line) and a multi-layered cap system associated with the NJCU Commercial Area of Concern in the eastern portion (east of the force main). The multi-layered cap included the following components above chromium-contaminated soils (from bottom to ground surface): impervious geo-membrane linear low density polyethylene (LLDPE) liner; geo-composite drainage layer (consisting of geotextile and clay soils), orange warning layer and clean soil cover (1-foot in paved areas).

Site 153 South

Remedial actions for the majority of Site 153 South consisted of excavation of shallow soils (up to three feet below grade), placement of orange demarcation layer (geotextile material) at the bottom of excavation areas, backfilling with clean fill and restoration of soil vegetative or asphalt cap consistent with pre-remediation surface types, as well as re-pavement or replacement of existing asphalt. Engineering controls include a combination of clean fill/vegetative cover and asphalt pavement. Details of remedial actions for each segment are as follows.

Site 153 South - Upper Segment

- Excavation areas: Soil excavation to a depth of 3 feet, installation of an orange demarcation geotextile material at the bottom of excavation, backfilling with clean fill and restoration with a soil vegetative cap.
- NJDOT ROW: Excavation of top six inches, installation of orange demarcation layer, backfilling and restoration with vegetative cap similar to the above excavation areas. This excavation area included a small area between the property limits and sidewalk.
- Paved asphalt areas: Remediation for areas containing paved asphalt consisted of repaving or replacing existing asphalt surfaces.
- Missing asphalt areas: In areas of missing asphalt with impacted soils within the top 3 feet, soils were removed, an orange warning layer installed and the area was backfilled and restored as described above. In areas where the top 3 feet of

soils were not impacted, the upper 12 inches were removed, and the area was backfilled with 6 inches of clean fill and restored with 6 inches of asphalt cap.

The remedial actions for Site 153 South Upper Segment included offsite transportation and disposal of approximately 622 tons (33 truckloads) of non-hazardous soil to the Middlesex County Landfill and 257 tons (11 truckloads) of hazardous chromium containing soil to US Ecology Idaho, Inc. of Grand View, Idaho Non-hazardous asphalt material (approximately 4o tons) was transported for recycling at Braen Industries of Haledon, New Jersey

Site 153 South - Lower Segment

- Soil excavation to a depth of 3 feet was performed for the majority of this segment.
- Excavation within NJDOT ROW: Excavation of the top six inches of existing grass areas within the NJDOT ROW in front of Langer Transport property and restoration with six inches of soil vegetative cap, and excavation in the area adjacent to Route 440 ROW at sufficient slope (one foot vertical for every two feet lateral) to prevent subsidence of soil beneath Route 440.
- Excavation around utility poles: Excavation to six inches within 4-foot radius around existing utility poles and structures as an aesthetic improvement as part of the NJDOT highway occupancy permit.
- Placement of orange demarcation geotextile material at the base and side slopes of the excavation areas to inform future workers not to dig below that layer due to the potential presence of chromium impacted soils.
- Backfilling of excavation areas with clean granular fill and restoration of soil vegetative or asphalt cap consistent with pre-remediation surface types.

The remedial actions for Site 153 South Lower Segment included offsite transportation and disposal of approximately 2,395 tons (98 truckloads) of non-hazardous soil to Keegan Landfill of Kearny, New Jersey and 746 tons (31 truckloads) of hazardous chromium-impacted soil to US Ecology Idaho, Inc. of Grand View, Idaho. Non-hazardous asphalt material (approximately 342 tons) was transported for recycling at Braen Industries of Haledon, New Jersey

The remedial actions meet the requirements of the Sewer Protocol as specified in the Consent Judgment and are therefore documented in this report as the final remedial actions for the Site (subject to the provisions of Paragraph 71 of the Consent Decree, as noted above and on page ES-4, footnote 1). The remedial actions for chromium also address contaminants associated with historic fill (PAHs, metals), which occur coincidently with hexavalent chromium on portions of the Site.

Groundwater

As indicated in the RIR (Section 5.7), shallow groundwater impacts are delineated based on data from monitoring wells on Site 153 and monitoring wells at other sites associated with SA-5, SA-6 and the SA-7 regional investigation. SA-5 shallow groundwater delineation was also completed as part of the SA-5 and SA-6 Consent Decree requirements and documented in a Shallow Offsite Groundwater Delineation and Remedy Proposal Report dated July 2011 (Mactec, 2011) and Shallow Groundwater Summary Report for SA-5 Site 117 dated September 2011 (Amec, 2011). The NJDEP approved the Shallow Groundwater Summary Report on July 3, 2012. Based on correspondence between Honeywell and the Riverkeeper (Plaintiffs) during 2013 and 2014, the Plaintiffs are in substantial agreement with Honeywell regarding SA-5 shallow groundwater requirements including long term monitoring and institutional control provisions.

From a site-specific and regional study area-wide perspective, data indicate that total and hexavalent chromium impacts in the shallow zone exist within localized portions of SA-5 including the northwest portion of Site 117, southwest portion of Site 090/184, and along a portion of Site 153 abutting these sites (Mactec, June 2011; Amec, September 2011). Regional shallow groundwater quality is expected to continue to improve as a result of remedial actions completed at the sites comprising SA-5, SA-7, and the remedial actions currently in progress at SA-6 (expected to be completed by 2016).

The deeper groundwater zones (below the shallow fill and meadow mat) are being addressed as part of the SA-7 regional investigation and remedy. The SA-7 regional groundwater remedy and Long Term Monitoring Plan includes monitoring to evaluate and document groundwater conditions within the SA-5/6/7 area and performance of the regional groundwater remedy. Based on the remedial actions completed, groundwater data, regional groundwater remedy being implemented and institutional control (CEA) established, monitored natural attenuation of

groundwater in conjunction with an RA Permit is proposed to address groundwater requirements for Site 153.

For the shallow groundwater zone (fill zone above the meadow mat) at Site 153, monitored natural attenuation is recommended based on the following technical lines of evidence:

- The source of shallow groundwater contamination has been characterized and delineated. The area of shallow groundwater impacts above the GWQS is limited to a localized area mainly within the northern portion of the Site corresponding to the area of COPR impacted fill (next to Site 117 and Sites 90/184).
- The area of shallow groundwater chromium impacts is stable and data collected over the last 15 years indicate generally consistent or decreasing trends in chromium concentrations in monitoring wells. The chromium-impacted fill has been in place for 50 to 100 years; chromium groundwater impacts in the shallow groundwater are limited to the area of fill contamination and have not migrated beyond the limits of chromium-impacted fill.
- Shallow groundwater data for Site 153 and other chromium-impacted fill sites indicates that chromium groundwater impacts are limited to the area of chromium-impacted fill and does not migrate laterally due to reducing conditions in surrounding historic fill, which favor the natural reduction of hexavalent chromium. The absence of chromium impacts in shallow groundwater outside the area of chromium-impacted fill is due to low hydraulic gradients and naturally occurring reducing conditions which promote reduction of hexavalent chromium. Vertical migration of hexavalent chromium from the shallow fill zone is mitigated by the peat layer that underlies the chromium-impacted areas.
- Groundwater impacts with hexavalent chromium in the shallow fill zone are significantly lower than the deeper overburden zone, and data indicate that shallow groundwater contamination is not migrating to the deeper groundwater zone; i.e., shallow groundwater associated with COPR fill is not a source of the deeper regional groundwater contamination. Chromium contamination in the deep overburden zone is the result of historical discharges of liquid chromate solutions at the former Mutual Chemical Plant at Site 117 and migration through the deep overburden deposits.

- Shallow groundwater impacts at Site 153 are minor when compared to the regional deep groundwater impacts associated with hexavalent chromium. The regional groundwater extraction/treatment system and mass removal treatment program will address hexavalent chromium if it migrates from the shallow to deeper zones. Deeper groundwater zones are being addressed as part of the SA-7 regional investigation and remedy.
- The remedial actions completed at Site 153 include a combination of shallow soil excavation and engineering controls (cap), which mitigates the risk of contact with contaminated soil and/or groundwater.
- Receptor evaluation indicates that shallow groundwater impacts do not pose an unacceptable risk to human health or the environment. Groundwater beneath the Site and surrounding area is not used as a source of potable water, and no potable water supply wells were identified within one mile of the Site.
- The regional groundwater quality within the shallow fill zone is poor due to the presence of other types of historical fill, low water yield capacity, and influence of saline surface water conditions in the area of the Site. Site-specific and regional data indicate that the natural quality of the groundwater beneath the Site is not suitable for conversion to potable uses. The former Morris Canal was filled with salt water when it was active and groundwater data for the shallow and deeper water bearing zones contains naturally occurring elements such as aluminum, chloride, iron, sodium, and total dissolved solids above the Class-IIA GWQS.
- A RA Permit for Groundwater will be obtained and include post-remediation groundwater monitoring and submittal of biennial certification reports to document remedial action protectiveness.
- An institutional control (CEA) for groundwater has been established to mitigate the use of groundwater in the area of the Site. Post-remediation monitoring will be conducted to mitigate potential future risk to receptors.

7.2 POST-REMEDIATION ACTIVITIES

7.2.1 Soils

Engineering Controls

Engineering controls are currently monitored via periodic visual inspections to document that the integrity of the cap is maintained and that the use of the property does not change in a manner that may create potential for exposure to soil

contaminants. Monitoring and reporting requirements are specified in the existing Deed Notice as well as Long Term Monitoring Plans prepared in accordance with SA-5 Consent Decrees pertaining to the NJCU Redevelopment Area (which includes Site 153 North) and Sites 79 and 153 South. Remedial Action Protectiveness Certification Reports are submitted to the NJDEP every two years in accordance with the existing Deed Notice. Remedial Action Protectiveness Certification Reports will continue to be submitted to the NJDEP every two years according to the schedule to be included in the RA Soil Permit.

Institutional Control - Deed Notice

A Deed Notice for the Site was recorded on November 30, 2010. The Deed Notice includes the limits of soils with hexavalent chromium concentrations greater than 20 mg/kg as a restricted area and non-chromium contaminants associated with historic fill (PAHs, metals) which occur coincidently with hexavalent chromium on portions of the Site. The Deed Notice specifies measures to be taken in the event of disturbance of engineering controls and notification/reporting requirements.

A modified Deed Notice has been prepared which reflects the completed remedial actions, current block and lot, and current NJDEP model deed notice format. The draft modified Deed Notice is provided in **Appendix J**. Following NJDEP review, Honeywell will record the modified Deed Notice with the Hudson County Register

Remedial Action Permit for Soil

Following recording of the modified Deed Notice, Honeywell will submit a Remedial Action Soil Permit Application to the NJDEP. The schedule for submittal of biennial remedial action protectiveness certification reports will be identified in the RA Permit for Soil to be issued by the NJDEP.

7.2.2 Groundwater

Institutional Control – CEA

A regional CEA for groundwater has been established for the SA-5/6/7 sites as an institutional control to identify chromium groundwater impacts above the GWQS and prevent the use of groundwater within the designated CEA area. CEA documentation was submitted to the NJDEP during June 2009 and the NJDEP approved the CEA in a letter dated February 16, 2012. The CEA addresses the shallow fill, deep overburden, and bedrock groundwater zones. The CEA duration is indeterminate.

Remedial Action Permit for Groundwater

Honeywell will obtain a RA Permit for Groundwater to address NJDEP requirements with respect to post-remediation monitoring, maintenance, and institutional controls for groundwater. It is anticipated that the RA Permit for Groundwater will be submitted as part of a regional permit for the sites comprising SA-5, SA-6 and SA-7, consistent with the existing CEA. The RA Permit application will include periodic monitoring of existing shallow monitoring wells at Site 153 and designated wells at other sites comprising SA-5/6/7. Currently, Honeywell is awaiting direction and input from the NJDEP regarding shallow zone requirements prior to submittal of a RA Permit Application.

Post-remediation monitoring and reporting requirements for the SA-5/6/7 sites are addressed in an Integrated Sampling and Analysis Plan (Cornerstone 2013). The plan includes a matrix of sampling locations, methods, and frequencies for water level monitoring and water quality sampling and analysis, and will be the basis for the monitoring and reporting schedule to be included in the RA Permit application. For Site 153, the plan specifies annual water level monitoring and biennial water quality monitoring (total and hexavalent chromium) of existing monitoring wells.

7.2.3 Remedial Action Protectiveness

Remedial Action Protectiveness Certification Reports for Soil are submitted to the NJDEP every two years in accordance with the existing Deed Notice. These reports will continue to be submitted to the NJDEP every two years according to the schedule to be included in the RA Soil Permit.

Remedial Action Protectiveness Certification Reports for Groundwater will be submitted following NJDEP issuance of the RA Soil Permit for Groundwater Permit. As discussed above in Section 7.2.2, Honeywell is awaiting direction and input from the NJDEP regarding shallow zone requirements prior to submittal of a RA Permit Application for Groundwater.

8.0 REFERENCES

Amec Environment and Infrastructure, Inc., 2011. Shallow Groundwater Summary Report – Study Area 5 Site 117 – Ryerson Steel Site; September 2011

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NJDEP, 2012e; Groundwater Investigation Technical Guidance; April 3, 2012

NJDEP, 2012f; Technical Guidance for the Attainment of Remediation Standards; September 24, 2012

NJDEP, 2013a; Preliminary Assessment Technical Guidance; April 2013

NJDEP, 2013b; Historic Fill Material Technical Guidance; April 29, 2013

NJDEP, 2013c; NJDEP Policy Statement on RI Completion, June 2013

NJDEP, 2014; Draft Technical Guidance on the Capping of Sites Undergoing Remediation; March 2014

TetraTech, 1999. Draft Remedial Investigation Report – Study Area 5; November 1999

9.0 LIST OF ACRONYMS AND ABBREVIATIONS

Amec	AMEC Environment & Infrastructure, Inc.
AOC	Area of concern
BEE	Baseline Ecological Evaluation
bgs	Below ground surface
BMUA	Bayonne Municipal Utilities Authority
cm/sec	Centimeter per second
CEA	Classification Exception Area
COPEC	Contaminants of potential ecological concern
COPR	Chromite ore processing residue
DMP	Data Management Plan
DO	Dissolved oxygen
EDD	Electronic data deliverables
EIM	Environmental Information Management
ESNR	Environmentally sensitive natural resources
GPR	Ground Penetrating Radar
GPS	Global Positioning System
GWQS	Groundwater Quality Standard
HASP	Health and Safety Plan
HOP	Highway Occupancy Permit
IRM	Interim Remedial Measures
LVRR	Lehigh Valley Railroad
MCBC	Morris Canal & Banking Company
µg/L	Micrograms per liter
µg/m^3	Micrograms per cubic meter
mg/kg	Milligrams per kilogram
MSL	Mean Sea Level
MW	Monitoring well
NAAQS	National Ambient Air Quality Standard
NAVD88	North American Vertical Datum of 1988
ND	Not detected
N.J.A.C.	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection
NJDOT	New Jersey Department of Transportation

NRDCSRS	Non-Residential Direct Contact Soil Remediation Standards
ORP	Oxidation-Reduction Potential
OSHA	Occupational Safety and Health Administration
PA	Preliminary assessment
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated biphenyl
PID	photo-ionization detector
PVC	Polyvinyl chloride
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/ Quality Control
RA	Remedial Action
RAR	Remedial Action Report
RDCSRS	Residential Direct Contact Soil Remediation Standards
RE	Receptor evaluation
RI	Remedial investigation
RIR	Remedial Investigation Report
RIWP	Remedial Investigation Work Plan
ROW	Right-of-way
SA	Study Area
SAP	Sampling and Analysis Plan
SI	Site Investigation
SOP	Standard Operating Procedure
SRP	Site Remediation Program
SRS	Soil Remediation Standards
SVOC	Semi-volatile organic compound
TAL	Target Analyte List
TCL	Target Compound List
TDS	Total dissolved solids
TPH	Total petroleum hydrocarbons
TRSR	Technical Requirements for Site Remediation
TTNUS	TetraTech NUS, Inc.
TWP	Temporary Well Point
VOC	Volatile Organic Compound
USEPA	United States Environmental Protection Agency
USDOT	United States Department of Transportation
WRA	Well Restriction Area

TABLES

TABLE 1A
SUMMARY OF SAMPLING PROGRAM
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

SAMPLE LOCATION ID	COMPLETION DATE	COMPLETION DEPTH (s)	COMPLETION METHOD	MATRIX	Bo in Location	Rationale	ANALYTICAL PARAMETERS
SOIL BORINGS							
153-SB-001 to 010	June 2009	9 to 13 ft	Geoprobe	Soil	Langer Transport LLC	Delineation to the east	Total and Hexavalent Chromium;
153-SB-011 to 022 153-SB-025 to 027	March 2010	7 to 23 ft	Geoprobe	Soil	State Highway Route 440 (NJDOT)	Delineation to the west	Total and Hexavalent Chromium;
153-SB-022 to 024 153-SB-028 to 033 153-SB-064	March/April/June 2010	3 to 16 ft	Geoprobe	Soil	Former Morris Canal	Delineation to the east, west and south	Total and Hexavalent Chromium
153-SB-057 to 059 153-SB-079 to 081	December 2010 / June 2011	7 to 13 ft	Geoprobe	Soil	Eden Wood Realty, LLC	Delineation to the east	Total and Hexavalent Chromium
153-SB-060 to 063 153-SB-069 153-SB-075 to 078	December 2010 / May 2011	3 to 13 ft	Geoprobe	Soil	440 Fisk Realty, LLC	Delineation to the north	Total and Hexavalent Chromium
153-SB-070 to 074, 079-SB-001	May 2011	10 to 12 ft	Geoprobe	Soil	Water Street ROW	Delineation to the east	Total and Hexavalent Chromium
153-SB-066 to 068	Feburary 2011	11 to 13 ft	Geoprobe	Soil	Mon-West Realty, LLC	Delineation to the southeast	Total and Hexavalent Chromium;
153-SB-065,101-115	Feburary 2011 / May to July 2014	2 to 14 ft	Geoprobe	Soil	Danforth Realty, LLC	Delineation to the southeast	Total and Hexavalent Chromium;
153-TWP-01 to 03	March 2010	20 ft	Geoprobe	Ground Water	State Highway Route 440 (NJDOT)	Delineation to the west within Route 440 ROW	Total and Hexavalent Chromium
153-TWP-04 to 06	September 2011	12 ft	Geoprobe	Ground Water	Former Morris Canal	Delineation to the south	Total and Hexavalent Chromium

Notes:
1. Quality assurance/quality control (QA/QC) samples will include one (1) field blank per day; and duplicate samples samples at a frequency of 5% of the total number of samples (1 out of 20 samples).
2. Laboratory analytical results will be reported using NJDEP Regulatory Format IV, Reduced Data Deliverables, Non-CLP Methods.
3. Laboratory analytical methods, preservation, and holding times as follows:

Soil	Methods	Preservation	Holding Times
Total Chromium	3050B/6010B	4°C	6 months
Hexavalent Chromium	3060A/7199	4°C	30 days extraction/7 days analysis

Prepared by: TG
Checked by: EB

TABLE 1B
SOIL BORINGS AND SAMPLE SUMMARY
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Field Sample ID	Location	Sample Depth (bgs)	Sample Date	Sample Delivery Group	Lab Sample ID	Matrix	Total Chromium	Hexavalent Chromium
153-SB-001-0002	153-SB-001	1-1.5 ft	06/10/2009	JA20750	JA20750-1|JA20750-1A	Soil	X	X
153-SB-001-0204	153-SB-001	3-4 ft	06/10/2009	JA20750	JA20750-2|JA20750-2A	Soil	X	X
153-SB-001-0406	153-SB-001	5-5.5 ft	06/10/2009	JA20750	JA20750-3|JA20750-3A	Soil	X	X
153-SB-001-0608	153-SB-001	7-7.5 ft	06/10/2009	JA20750	JA20750-4|JA20750-4A|JA20750-4AR	Soil	X	X
153-SB-001-0810	153-SB-001	8.5-9 ft	06/10/2009	JA20750	JA20750-5|JA20750-5A|JA20750-5AR	Soil	X	X
153-SB-003-0002	153-SB-003	1-1.5 ft	06/10/2009	JA20750	JA20750-15|JA20750-15A	Soil	X	X
153-SB-003-0204	153-SB-003	2.5-3 ft	06/10/2009	JA20750	JA20750-16|JA20750-16A	Soil	X	X
153-SB-003-0406	153-SB-003	4-4.5 ft	06/10/2009	JA20750	JA20750-17|JA20750-17A	Soil	X	X
153-SB-003-0608	153-SB-003	6-6.5 ft	06/10/2009	JA20750	JA20750-18|JA20750-18A|JA20750-18AR	Soil	X	X
153-SB-003-0810	153-SB-003	9-9.5 ft	06/10/2009	JA20750	JA20750-19|JA20750-19A|JA20750-19AR	Soil	X	X
153-SB-005-0002	153-SB-005	1.5-2 ft	06/10/2009	JA20750	JA20750-27|JA20750-27A	Soil	X	X
153-SB-005-0204	153-SB-005	2.5-3 ft	06/10/2009	JA20750	JA20750-28|JA20750-28A|JA20750-28AR	Soil	X	X
153-SB-005-0406	153-SB-005	4.5-5 ft	06/10/2009	JA20750	JA20750-29|JA20750-29A|JA20750-29AR	Soil	X	X
153-SB-005-0608	153-SB-005	6-6.5 ft	06/10/2009	JA20750	JA20750-30|JA20750-30A	Soil	X	X
153-SB-005-0810	153-SB-005	8-8.5 ft	06/10/2009	JA20750	JA20750-31|JA20750-31A|JA20750-31AR	Soil	X	X
153-SB-005-1012	153-SB-005	10.5-11 ft	06/10/2009	JA20750	JA20750-32|JA20750-32A|JA20750-32AR	Soil	X	X
153-SB-007-0002	153-SB-007	1-1.5 ft	06/10/2009	JA20750	JA20750-40|JA20750-40A	Soil	X	X
153-SB-007-0204	153-SB-007	3-3.5 ft	06/10/2009	JA20750	JA20750-41|JA20750-41A|JA20750-41AR	Soil	X	X
153-SB-007-0406	153-SB-007	4-4.5 ft	06/10/2009	JA20750	JA20750-42|JA20750-42A	Soil	X	X
153-SB-007-0608	153-SB-007	6-6.5 ft	06/10/2009	JA20750	JA20750-43|JA20750-43A|JA20750-43AR	Soil	X	X
153-SB-007-0810	153-SB-007	8-8.5 ft	06/10/2009	JA20750	JA20750-44|JA20750-44A|JA20750-44AR	Soil	X	X
153-SB-007-1012	153-SB-007	10-10.5 ft	06/10/2009	JA20750	JA20750-45|JA20750-45A|JA20750-45AR	Soil	X	X
153-SB-007-1012DP	153-SB-007	10-10.5 ft	06/10/2009	JA20750	JA20750-46|JA20750-46A|JA20750-46AR	Soil	X	X
153-SB-008-0002	153-SB-008	1.5-2 ft	06/10/2009	JA20750	JA20750-47R|JA20750-47RT	Soil	X	X
153-SB-008-0204	153-SB-008	3.5-4 ft	06/10/2009	JA20750	JA20750-48R|JA20750-48RT	Soil	X	X
153-SB-008-0406	153-SB-008	4.5-5 ft	06/10/2009	JA20750	JA20750-49R|JA20750-49RT	Soil	X	X
153-SB-008-0608	153-SB-008	6.5-7 ft	06/10/2009	JA20750	JA20750-50R|JA20750-50RT	Soil	X	X
153-SB-008-0810	153-SB-008	8.5-9 ft	06/10/2009	JA20750	JA20750-51R|JA20750-51RT	Soil	X	X
153-SB-008-1012	153-SB-008	10.5-11 ft	06/10/2009	JA20750	JA20750-52R|JA20750-52RT	Soil	X	X
153-SB-009-0002	153-SB-009	0.5-1 ft	06/10/2009	JA20750	JA20750-53|JA20750-53A	Soil	X	X
153-SB-009-0204	153-SB-009	3-3.5 ft	06/10/2009	JA20750	JA20750-54|JA20750-54A	Soil	X	X
153-SB-009-0406	153-SB-009	4.5-5 ft	06/10/2009	JA20750	JA20750-55|JA20750-55A|JA20750-55AR	Soil	X	X
153-SB-009-0608	153-SB-009	6.5-7 ft	06/10/2009	JA20750	JA20750-56|JA20750-56A|JA20750-56AR	Soil	X	X
153-SB-009-0810	153-SB-009	8.5-9 ft	06/10/2009	JA20750	JA20750-57|JA20750-57A|JA20750-57AR	Soil	X	X
153-SB-009-1012	153-SB-009	10-10.5 ft	06/10/2009	JA20750	JA20750-58|JA20750-58A|JA20750-58AR	Soil	X	X
153-SB-009-1012DP	153-SB-009	8.5-9 ft	06/10/2009	JA20750	JA20750-60|JA20750-60A|JA20750-60AR	Soil	X	X
153-SB-009-1214	153-SB-009	12.5-13 ft	06/10/2009	JA20750	JA20750-59|JA20750-59A|JA20750-59AR	Soil	X	X
153-SB-011-0002	153-SB-011	1-1.5 ft	03/16/2010	JA41933	JA41933-25|JA41933-25A	Soil	X	X
153-SB-011-0204	153-SB-011	2.5-3 ft	03/16/2010	JA41933	JA41933-26|JA41933-26A|JA41933-26AR	Soil	X	X
153-SB-011-0406	153-SB-011	4.5-5 ft	03/16/2010	JA41933	JA41933-27|JA41933-27A	Soil	X	X
153-SB-011-0608	153-SB-011	6-6.5 ft	03/16/2010	JA41933	JA41933-28|JA41933-28A	Soil	X	X
153-SB-011-0608DP	153-SB-011	6-6.5 ft	03/16/2010	JA41933	JA41933-35|JA41933-35A	Soil	X	X
153-SB-011-0810	153-SB-011	9-9.5 ft	03/16/2010	JA41933	JA41933-29|JA41933-29A	Soil	X	X
153-SB-011-1012	153-SB-011	10.5-11 ft	03/16/2010	JA41933	JA41933-30|JA41933-30A	Soil	X	X
153-SB-011-1214	153-SB-011	12-12.5 ft	03/16/2010	JA41933	JA41933-31|JA41933-31A	Soil	X	X
153-SB-011-1416	153-SB-011	15-15.5 ft	03/16/2010	JA41933	JA41933-32|JA41933-32A	Soil	X	X

Prepared by: TG
Reviewed by: KK

TABLE 1B
SOIL BORINGS AND SAMPLE SUMMARY
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Field Sample ID	Location	Sample Depth (bgs)	Sample Date	Sample Delivery Group	Lab Sample ID	Matrix	Total Chromium	Hexavalent Chromium
153-SB-012-0002	153-SB-012	1-1.5 ft	03/16/2010	JA41933	JA41933-15|JA41933-15A|JA41933-15AR	Soil	X	X
153-SB-012-0204	153-SB-012	2.5-3 ft	03/16/2010	JA41933	JA41933-16|JA41933-16A|JA41933-16AR	Soil	X	X
153-SB-012-0406	153-SB-012	4.5-5 ft	03/16/2010	JA41933	JA41933-17|JA41933-17A	Soil	X	X
153-SB-012-0608	153-SB-012	6-6.5 ft	03/16/2010	JA41933	JA41933-18|JA41933-18A|JA41933-18AR	Soil	X	X
153-SB-012-0810	153-SB-012	8.5-9 ft	03/16/2010	JA41933	JA41933-19|JA41933-19A	Soil	X	X
153-SB-012-1012	153-SB-012	10.5-11 ft	03/16/2010	JA41933	JA41933-20|JA41933-20A	Soil	X	X
153-SB-012-1214	153-SB-012	13.5-14 ft	03/16/2010	JA41933	JA41933-21|JA41933-21A	Soil	X	X
153-SB-012-1416	153-SB-012	14-14.5 ft	03/16/2010	JA41933	JA41933-22|JA41933-22A	Soil	X	X
153-SB-013-0002	153-SB-013	1-1.5 ft	03/15/2010	JA41884	JA41884-36|JA41884-36A|JA41884-36AR	Soil	X	X
153-SB-013-0204	153-SB-013	2-2.5 ft	03/15/2010	JA41884	JA41884-37|JA41884-37A	Soil	X	X
153-SB-013-0406	153-SB-013	4.5-5 ft	03/15/2010	JA41884	JA41884-38|JA41884-38A|JA41884-38AR	Soil	X	X
153-SB-013-0608	153-SB-013	6.5-7 ft	03/15/2010	JA41884	JA41884-39|JA41884-39A	Soil	X	X
153-SB-013-0810	153-SB-013	9-9.5 ft	03/15/2010	JA41884	JA41884-40|JA41884-40A	Soil	X	X
153-SB-013-1012	153-SB-013	10-10.5 ft	03/15/2010	JA41884	JA41884-41AR|JA41884-41T	Soil	X	X
153-SB-014-0002	153-SB-014	1-1.5 ft	03/15/2010	JA41884	JA41884-65AR|JA41884-65T	Soil	X	X
153-SB-014-0204	153-SB-014	2-2.5 ft	03/15/2010	JA41884	JA41884-66AR|JA41884-66T	Soil	X	X
153-SB-014-0406	153-SB-014	5-5.5 ft	03/15/2010	JA41884	JA41884-67AR|JA41884-67T	Soil	X	X
153-SB-014-0608	153-SB-014	6.5-7 ft	03/15/2010	JA41884	JA41884-68AR|JA41884-68T	Soil	X	X
153-SB-014-0810	153-SB-014	8.5-9 ft	03/15/2010	JA41884	JA41884-69AR|JA41884-69T	Soil	X	X
153-SB-014-1012	153-SB-014	10.5-11 ft	03/15/2010	JA41884	JA41884-70AR|JA41884-70T	Soil	X	X
153-SB-015-0002	153-SB-015	1-1.5 ft	03/16/2010	JA41933	JA41933-1|JA41933-1A|JA41933-1AR	Soil	X	X
153-SB-015-0204	153-SB-015	2-2.5 ft	03/16/2010	JA41933	JA41933-2|JA41933-2A|JA41933-2AR	Soil	X	X
153-SB-015-0406	153-SB-015	4-4.5 ft	03/16/2010	JA41933	JA41933-3|JA41933-3A	Soil	X	X
153-SB-015-0608	153-SB-015	6.5-7 ft	03/16/2010	JA41933	JA41933-4|JA41933-4A|JA41933-4AR	Soil	X	X
153-SB-015-0810	153-SB-015	9-9.5 ft	03/16/2010	JA41933	JA41933-5|JA41933-5A	Soil	X	X
153-SB-015-1012	153-SB-015	11-11.5 ft	03/16/2010	JA41933	JA41933-6|JA41933-6A|JA41933-6AR	Soil	X	X
153-SB-015-1214	153-SB-015	12.5-13 ft	03/16/2010	JA41933	JA41933-7|JA41933-7A|JA41933-7AR	Soil	X	X
153-SB-015-1416	153-SB-015	15-15.5 ft	03/16/2010	JA41933	JA41933-8|JA41933-8A|JA41933-8AR	Soil	X	X
153-SB-015-1618	153-SB-015	16-16.5 ft	03/16/2010	JA41933	JA41933-9|JA41933-9A	Soil	X	X
153-SB-015-1820	153-SB-015	18-18.5 ft	03/16/2010	JA41933	JA41933-10|JA41933-10A	Soil	X	X
153-SB-015-1820DP	153-SB-015	18-18.5 ft	03/16/2010	JA41933	JA41933-14|JA41933-14A	Soil	X	X
153-SB-015-2022	153-SB-015	20-21 ft	03/16/2010	JA41933	JA41933-11|JA41933-11A	Soil	X	X
153-SB-015-2224	153-SB-015	22.5-23 ft	03/16/2010	JA41933	JA41933-12|JA41933-12A	Soil	X	X
153-SB-016-0002	153-SB-016	1-1.5 ft	03/15/2010	JA41884	JA41884-21|JA41884-21A|JA41884-21AR	Soil	X	X
153-SB-016-0002DP	153-SB-016	1-1.5 ft	03/15/2010	JA41884	JA41884-34|JA41884-34A|JA41884-34AR	Soil	X	X
153-SB-016-0204	153-SB-016	2.5-3 ft	03/15/2010	JA41884	JA41884-22|JA41884-22A|JA41884-22AR	Soil	X	X
153-SB-016-0204DP	153-SB-016	2.5-3 ft	03/15/2010	JA41884	JA41884-35|JA41884-35A|JA41884-35AR	Soil	X	X
153-SB-016-0406	153-SB-016	5-5.5 ft	03/15/2010	JA41884	JA41884-23|JA41884-23A|JA41884-23AR	Soil	X	X
153-SB-016-0608	153-SB-016	6-6.5 ft	03/15/2010	JA41884	JA41884-24|JA41884-24A|JA41884-24AR	Soil	X	X
153-SB-016-0810	153-SB-016	8-8.5 ft	03/15/2010	JA41884	JA41884-25|JA41884-25A|JA41884-25AR	Soil	X	X
153-SB-016-1012	153-SB-016	10.5-11 ft	03/15/2010	JA41884	JA41884-26|JA41884-26A|JA41884-26AR	Soil	X	X
153-SB-016-1214	153-SB-016	12-12.5 ft	03/15/2010	JA41884	JA41884-27|JA41884-27A|JA41884-27AR	Soil	X	X
153-SB-016-1416	153-SB-016	14.5-15 ft	03/15/2010	JA41884	JA41884-28|JA41884-28A|JA41884-28AR	Soil	X	X
153-SB-016-1618	153-SB-016	16.5-17 ft	03/15/2010	JA41884	JA41884-29|JA41884-29A	Soil	X	X
153-SB-016-1820	153-SB-016	18.5-19 ft	03/15/2010	JA41884	JA41884-30|JA41884-30A	Soil	X	X
153-SB-016-2022	153-SB-016	20.5-21 ft	03/15/2010	JA41884	JA41884-31|JA41884-31A|JA41884-31AR	Soil	X	X

Prepared by: TG
Reviewed by: KK

TABLE 1B
SOIL BORINGS AND SAMPLE SUMMARY
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Field Sample ID	Location	Sample Depth (bgs)	Sample Date	Sample Delivery Group	Lab Sample ID	Matrix	Total Chromium	Hexavalent Chromium
153-SB-016-2224	153-SB-016	23.5-24 ft	03/15/2010	JA41884	JA41884-32|JA41884-32A|JA41884-32AR	Soil	X	X
153-SB-017-0002	153-SB-017	0.5-1 ft	03/15/2010	JA41884	JA41884-8|JA41884-8A|JA41884-8AR	Soil	X	X
153-SB-017-0204	153-SB-017	3-3.5 ft	03/15/2010	JA41884	JA41884-9|JA41884-9A|JA41884-9AR	Soil	X	X
153-SB-017-0406	153-SB-017	4-4.5 ft	03/15/2010	JA41884	JA41884-10|JA41884-10A|JA41884-10AR	Soil	X	X
153-SB-017-0608	153-SB-017	6.5-7 ft	03/15/2010	JA41884	JA41884-11|JA41884-11A|JA41884-11AR	Soil	X	X
153-SB-017-0810	153-SB-017	8-8.5 ft	03/15/2010	JA41884	JA41884-12|JA41884-12A|JA41884-12AR	Soil	X	X
153-SB-017-1012	153-SB-017	10-10.5 ft	03/15/2010	JA41884	JA41884-13|JA41884-13A|JA41884-13AR	Soil	X	X
153-SB-017-1214	153-SB-017	13.5-14 ft	03/15/2010	JA41884	JA41884-14|JA41884-14A|JA41884-14AR	Soil	X	X
153-SB-017-1416	153-SB-017	15-15.5 ft	03/15/2010	JA41884	JA41884-15|JA41884-15A|JA41884-15AR	Soil	X	X
153-SB-017-1618	153-SB-017	16-16.5 ft	03/15/2010	JA41884	JA41884-16|JA41884-16A|JA41884-16AR	Soil	X	X
153-SB-017-1820	153-SB-017	19.5-20 ft	03/15/2010	JA41884	JA41884-17|JA41884-17A|JA41884-17AR	Soil	X	X
153-SB-017-2022	153-SB-017	20-20.5 ft	03/15/2010	JA41884	JA41884-18|JA41884-18A|JA41884-18AR	Soil	X	X
153-SB-017-2224	153-SB-017	22.5-23 ft	03/15/2010	JA41884	JA41884-19|JA41884-19A|JA41884-19AR	Soil	X	X
153-SB-018-0002	153-SB-018	1-1.5 ft	03/15/2010	JA41884	JA41884-58AR|JA41884-58T	Soil	X	X
153-SB-018-0204	153-SB-018	2.5-3 ft	03/15/2010	JA41884	JA41884-59|JA41884-59A	Soil	X	X
153-SB-018-0406	153-SB-018	4.5-5 ft	03/15/2010	JA41884	JA41884-60|JA41884-60A	Soil	X	X
153-SB-018-0608	153-SB-018	7-7.5 ft	03/15/2010	JA41884	JA41884-61AR|JA41884-61T	Soil	X	X
153-SB-018-0810	153-SB-018	8.5-9 ft	03/15/2010	JA41884	JA41884-62|JA41884-62A	Soil	X	X
153-SB-018-1012	153-SB-018	10.5-11 ft	03/15/2010	JA41884	JA41884-63|JA41884-63A	Soil	X	X
153-SB-019-0002	153-SB-019	1-1.5 ft	03/15/2010	JA41884	JA41884-1|JA41884-1A|JA41884-1AR	Soil	X	X
153-SB-019-0204	153-SB-019	3-3.5 ft	03/15/2010	JA41884	JA41884-2|JA41884-2A|JA41884-2AR	Soil	X	X
153-SB-019-0406	153-SB-019	4.5-5 ft	03/15/2010	JA41884	JA41884-3|JA41884-3A|JA41884-3AR	Soil	X	X
153-SB-019-0608	153-SB-019	6-6.5 ft	03/15/2010	JA41884	JA41884-4|JA41884-4A|JA41884-4AR	Soil	X	X
153-SB-019-0810	153-SB-019	9-9.5 ft	03/15/2010	JA41884	JA41884-5|JA41884-5A|JA41884-5AR	Soil	X	X
153-SB-019-1012	153-SB-019	11.5-12 ft	03/15/2010	JA41884	JA41884-6|JA41884-6A|JA41884-6AR	Soil	X	X
153-SB-020-0002	153-SB-020	1-1.5 ft	03/15/2010	JA41884	JA41884-51|JA41884-51A|JA41884-51AR	Soil	X	X
153-SB-020-0204	153-SB-020	2.5-3 ft	03/15/2010	JA41884	JA41884-52|JA41884-52A|JA41884-52AR	Soil	X	X
153-SB-020-0406	153-SB-020	4.5-5 ft	03/15/2010	JA41884	JA41884-53|JA41884-53A|JA41884-53AR	Soil	X	X
153-SB-020-0608	153-SB-020	6.5-7 ft	03/15/2010	JA41884	JA41884-54AR|JA41884-54T	Soil	X	X
153-SB-021-0002	153-SB-021	1.5-2 ft	03/16/2010	JA42072	JA42072-1|JA42072-1A	Soil	X	X
153-SB-021-0204	153-SB-021	3-3.5 ft	03/16/2010	JA42072	JA42072-2|JA42072-2A	Soil	X	X
153-SB-021-0406	153-SB-021	4.5-5 ft	03/16/2010	JA42072	JA42072-3|JA42072-3A	Soil	X	X
153-SB-021-0608	153-SB-021	6.5-7 ft	03/16/2010	JA42072	JA42072-4|JA42072-4A|JA42072-4AR	Soil	X	X
153-SB-021-0810	153-SB-021	8.5-9 ft	03/16/2010	JA42072	JA42072-5|JA42072-5A|JA42072-5AR	Soil	X	X
153-SB-021-1012	153-SB-021	10.5-11 ft	03/16/2010	JA42072	JA42072-6|JA42072-6A|JA42072-6AR	Soil	X	X
153-SB-021DP-0810	153-SB-021	8.5-9 ft	03/16/2010	JA42072	JA42072-8|JA42072-8A|JA42072-8AR	Soil	X	X
153-SB-022-0406	153-SB-022	4.5-5 ft	03/12/2010	JA41735	JA41735-1|JA41735-1A|JA41735-1AR	Soil	X	X
153-SB-022-0608	153-SB-022	6.5-7 ft	03/12/2010	JA41735	JA41735-2|JA41735-2A	Soil	X	X
153-SB-022-0810	153-SB-022	9-9.5 ft	03/12/2010	JA41735	JA41735-3|JA41735-3A|JA41735-3AR	Soil	X	X
153-SB-023-0406	153-SB-023	5-5.5 ft	03/12/2010	JA41735	JA41735-6|JA41735-6A	Soil	X	X
153-SB-023-0608	153-SB-023	6-6.5 ft	03/12/2010	JA41735	JA41735-7|JA41735-7A|JA41735-7AR	Soil	X	X
153-SB-023-0810	153-SB-023	8-8.5 ft	03/12/2010	JA41735	JA41735-8|JA41735-8A|JA41735-8AR	Soil	X	X
153-SB-023-1012	153-SB-023	10.5-11 ft	03/12/2010	JA41735	JA41735-9|JA41735-9A|JA41735-9AR	Soil	X	X
153-SB-023DP-1012	153-SB-023	10.5-11 ft	03/12/2010	JA41735	JA41735-10|JA41735-10A|JA41735-10AR	Soil	X	X
153-SB-024-0406	153-SB-024	4-4.5 ft	03/12/2010	JA41735	JA41735-12|JA41735-12A|JA41735-12AR	Soil	X	X
153-SB-024-0608	153-SB-024	6.5-7 ft	03/12/2010	JA41735	JA41735-13|JA41735-13A|JA41735-13AR	Soil	X	X

Prepared by: TG
Reviewed by: KK

TABLE 1B
SOIL BORINGS AND SAMPLE SUMMARY
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Field Sample ID	Location	Sample Depth (bgs)	Sample Date	Sample Delivery Group	Lab Sample ID	Matrix	Total Chromium	Hexavalent Chromium
153-SB-024-0810	153-SB-024	8.5-9 ft	03/12/2010	JA41735	JA41735-14|JA41735-14A|JA41735-14AR	Soil	X	X
153-SB-024-1012	153-SB-024	10.5-11 ft	03/12/2010	JA41735	JA41735-15|JA41735-15A|JA41735-15AR	Soil	X	X
153-SB-025-0002	153-SB-025	1-1.5 ft	03/15/2010	JA41884	JA41884-44|JA41884-44A|JA41884-44AR	Soil	X	X
153-SB-025-0204	153-SB-025	2.5-3 ft	03/15/2010	JA41884	JA41884-45|JA41884-45A|JA41884-45AR	Soil	X	X
153-SB-025-0406	153-SB-025	4.5-5 ft	03/15/2010	JA41884	JA41884-46AR|JA41884-46T	Soil	X	X
153-SB-025-0608	153-SB-025	6.5-7 ft	03/15/2010	JA41884	JA41884-47|JA41884-47A|JA41884-47AR	Soil	X	X
153-SB-025-0810	153-SB-025	9-9.5 ft	03/15/2010	JA41884	JA41884-48|JA41884-48A|JA41884-48AR	Soil	X	X
153-SB-025-1012	153-SB-025	10-10.5 ft	03/15/2010	JA41884	JA41884-49|JA41884-49A|JA41884-49AR	Soil	X	X
153-SB-026-0002	153-SB-026	1-1.5 ft	03/16/2010	JA41933	JA41933-36|JA41933-36A|JA41933-36AR	Soil	X	X
153-SB-026-0204	153-SB-026	2.5-3 ft	03/16/2010	JA41933	JA41933-37|JA41933-37A|JA41933-37AR	Soil	X	X
153-SB-026-0406	153-SB-026	4-4.5 ft	03/16/2010	JA41933	JA41933-38|JA41933-38A|JA41933-38AR	Soil	X	X
153-SB-026-0608	153-SB-026	6.5-7 ft	03/16/2010	JA41933	JA41933-39|JA41933-39A|JA41933-39AR	Soil	X	X
153-SB-026-0810	153-SB-026	8-8.5 ft	03/16/2010	JA41933	JA41933-40|JA41933-40A|JA41933-40AR	Soil	X	X
153-SB-026-1012	153-SB-026	10-10.5 ft	03/16/2010	JA41933	JA41933-41|JA41933-41A|JA41933-41AR	Soil	X	X
153-SB-026DP-0002	153-SB-026	1-1.5 ft	03/16/2010	JA41933	JA41933-43|JA41933-43A|JA41933-43AR	Soil	X	X
153-SB-027-0002	153-SB-027	1-1.5 ft	03/17/2010	JA42072	JA42072-21|JA42072-21A	Soil	X	X
153-SB-027-0204	153-SB-027	2-2.5 ft	03/17/2010	JA42072	JA42072-22|JA42072-22A	Soil	X	X
153-SB-027-0406	153-SB-027	3.5-4 ft	03/17/2010	JA42072	JA42072-23|JA42072-23A	Soil	X	X
153-SB-027-0608	153-SB-027	6-6.5 ft	03/17/2010	JA42072	JA42072-24|JA42072-24A	Soil	X	X
153-SB-027-0810	153-SB-027	8-8.5 ft	03/17/2010	JA42072	JA42072-25|JA42072-25A	Soil	X	X
153-SB-027-1012	153-SB-027	10.5-11 ft	03/17/2010	JA42072	JA42072-26|JA42072-26A|JA42072-26AR	Soil	X	X
153-SB-027-1214	153-SB-027	12.5-13 ft	03/17/2010	JA42072	JA42072-27|JA42072-27A|JA42072-27AR	Soil	X	X
153-SB-028-0002	153-SB-028	1-1.5 ft	03/17/2010	JA42072	JA42072-17|JA42072-17A|JA42072-17AR	Soil	X	X
153-SB-028-0204	153-SB-028	2.5-3 ft	03/17/2010	JA42072	JA42072-18|JA42072-18A	Soil	X	X
153-SB-029-0002	153-SB-029	0.5-1 ft	03/17/2010	JA42072	JA42072-9|JA42072-9A|JA42072-9AR	Soil	X	X
153-SB-029-0204	153-SB-029	2-2.5 ft	03/17/2010	JA42072	JA42072-10|JA42072-10A|JA42072-10AR	Soil	X	X
153-SB-029-0406	153-SB-029	5-5.5 ft	03/17/2010	JA42072	JA42072-11|JA42072-11A|JA42072-11AR	Soil	X	X
153-SB-029-0608	153-SB-029	6.5-7 ft	03/17/2010	JA42072	JA42072-12|JA42072-12A|JA42072-12AR	Soil	X	X
153-SB-029-0810	153-SB-029	9-9.5 ft	03/17/2010	JA42072	JA42072-13|JA42072-13A	Soil	X	X
153-SB-029-1012	153-SB-029	10.5-11 ft	03/17/2010	JA42072	JA42072-14|JA42072-14A|JA42072-14AR	Soil	X	X
153-SB-029-1214	153-SB-029	12.5-13 ft	03/17/2010	JA42072	JA42072-15|JA42072-15A|JA42072-15AR	Soil	X	X
153-SB-030-0002	153-SB-030	1.5-2 ft	03/25/2010	JA42736	JA42736-1|JA42736-1A	Soil	X	X
153-SB-030-0204	153-SB-030	3-3.5 ft	03/25/2010	JA42736	JA42736-2|JA42736-2A	Soil	X	X
153-SB-030-0406	153-SB-030	5.5-6 ft	03/25/2010	JA42736	JA42736-3|JA42736-3A	Soil	X	X
153-SB-030-0608	153-SB-030	7.5-8 ft	03/25/2010	JA42736	JA42736-4|JA42736-4A	Soil	X	X
153-SB-030-0810	153-SB-030	9-9.5 ft	03/25/2010	JA42736	JA42736-5|JA42736-5A	Soil	X	X
153-SB-030-1012	153-SB-030	10.5-11 ft	03/25/2010	JA42736	JA42736-6|JA42736-6A	Soil	X	X
153-SB-030-1214	153-SB-030	12.5-13 ft	03/25/2010	JA42736	JA42736-7|JA42736-7A	Soil	X	X
153-SB-030-1416	153-SB-030	15-15.5 ft	03/25/2010	JA42736	JA42736-8|JA42736-8A	Soil	X	X
153-SB-031-0002	153-SB-031	1.5-2 ft	03/25/2010	JA42736	JA42736-9|JA42736-9A	Soil	X	X
153-SB-031-0002DP	153-SB-031	1.5-2 ft	03/25/2010	JA42736	JA42736-10|JA42736-10A	Soil	X	X
153-SB-031-0204	153-SB-031	3.5-4 ft	03/25/2010	JA42736	JA42736-11|JA42736-11A	Soil	X	X
153-SB-031-0406	153-SB-031	5-5.5 ft	03/25/2010	JA42736	JA42736-12|JA42736-12A	Soil	X	X
153-SB-031-0608	153-SB-031	6-6.2 ft	03/25/2010	JA42736	JA42736-13|JA42736-13A	Soil	X	X
153-SB-031-0810	153-SB-031	9-9.5 ft	03/25/2010	JA42736	JA42736-14|JA42736-14A	Soil	X	X
153-SB-031-1012	153-SB-031	11.5-12 ft	03/25/2010	JA42736	JA42736-15|JA42736-15A	Soil	X	X

Prepared by: TG
Reviewed by: KK

TABLE 1B
SOIL BORINGS AND SAMPLE SUMMARY
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Field Sample ID	Location	Sample Depth (bgs)	Sample Date	Sample Delivery Group	Lab Sample ID	Matrix	Total Chromium	Hexavalent Chromium
153-SB-031-1214	153-SB-031	12.5-13 ft	03/25/2010	JA42736	JA42736-16|JA42736-16A	Soil	X	X
153-SB-031-1416	153-SB-031	15-15.5 ft	03/25/2010	JA42736	JA42736-17|JA42736-17A	Soil	X	X
153-SB-031-1416DP	153-SB-031	15-15.5 ft	03/25/2010	JA42736	JA42736-18|JA42736-18A	Soil	X	X
153-SB-032-0002	153-SB-032	1.5-2 ft	03/25/2010	JA42736	JA42736-19|JA42736-19A	Soil	X	X
153-SB-032-0204	153-SB-032	3-3.5 ft	03/25/2010	JA42736	JA42736-20|JA42736-20A	Soil	X	X
153-SB-032-0406	153-SB-032	4.5-5 ft	03/25/2010	JA42736	JA42736-21|JA42736-21A|JA42736-21AR	Soil	X	X
153-SB-032-0608	153-SB-032	6-6.5 ft	03/25/2010	JA42736	JA42736-22|JA42736-22A|JA42736-22AR	Soil	X	X
153-SB-032-0810	153-SB-032	8.5-9 ft	03/25/2010	JA42736	JA42736-23|JA42736-23A|JA42736-23AR	Soil	X	X
153-SB-032-1012	153-SB-032	11.5-12 ft	03/25/2010	JA42736	JA42736-24|JA42736-24A|JA42736-24AR	Soil	X	X
153-SB-032-1214	153-SB-032	13-13.5 ft	03/25/2010	JA42736	JA42736-25|JA42736-25A|JA42736-25AR	Soil	X	X
153-SB-032-1416	153-SB-032	15-15.5 ft	03/25/2010	JA42736	JA42736-26|JA42736-26A|JA42736-26AR	Soil	X	X
153-SB-033-0002	153-SB-033	0.5-1 ft	04/30/2010	JA45464	JA45464-1AR|JA45464-1T	Soil	X	X
153-SB-033-0204	153-SB-033	3-3.5 ft	04/30/2010	JA45464	JA45464-2AR|JA45464-2T	Soil	X	X
153-SB-033-0406	153-SB-033	5.5-6 ft	04/30/2010	JA45464	JA45464-3AR|JA45464-3T	Soil	X	X
153-SB-033-0608	153-SB-033	6.5-7 ft	04/30/2010	JA45464	JA45464-4AR|JA45464-4T	Soil	X	X
153-SB-033-0810	153-SB-033	9.5-10 ft	04/30/2010	JA45464	JA45464-5AR|JA45464-5T	Soil	X	X
153-SB-033-1012	153-SB-033	10.5-11 ft	04/30/2010	JA45464	JA45464-6AR|JA45464-6T	Soil	X	X
153-SB-033-1012DP	153-SB-033	10.5-11 ft	04/30/2010	JA45464	JA45464-7AR|JA45464-7T	Soil	X	X
153-SB-033-1214	153-SB-033	12.5-13 ft	04/30/2010	JA45464	JA45464-8AR|JA45464-8T	Soil	X	X
153-SB-033-1416	153-SB-033	14.5-15 ft	04/30/2010	JA45464	JA45464-9AR|JA45464-9T	Soil	X	X
153-SB-042-0203	153-SB-042	2-2.5 ft	03/22/2010	JA42465	JA42465-1|JA42465-1A	Soil	X	X
153-SB-043-0203	153-SB-043	2-2.5 ft	03/22/2010	JA42465	JA42465-2|JA42465-2A	Soil	X	X
153-SB-044-0203	153-SB-044	2-2.5 ft	03/22/2010	JA42465	JA42465-3|JA42465-3A	Soil	X	X
153-SB-045-0203	153-SB-045	2-2.5 ft	03/22/2010	JA42465	JA42465-4|JA42465-4A	Soil	X	X
153-SB-045DP-0203	153-SB-045	2-2.5 ft	03/22/2010	JA42465	JA42465-5|JA42465-5A	Soil	X	X
153-SB-046-0304	153-SB-046	3-3.5 ft	03/22/2010	JA42465	JA42465-6|JA42465-6A	Soil	X	X
153-SB-047-0304	153-SB-047	3-3.5 ft	03/22/2010	JA42465	JA42465-7|JA42465-7A	Soil	X	X
153-SB-048-0304	153-SB-048	3-3.5 ft	03/22/2010	JA42465	JA42465-8|JA42465-8A	Soil	X	X
153-SB-049-0304	153-SB-049	3-3.5 ft	03/22/2010	JA42465	JA42465-9|JA42465-9A	Soil	X	X
153-SB-050-0304	153-SB-050	3-3.5 ft	03/22/2010	JA42465	JA42465-10|JA42465-10A	Soil	X	X
153-SB-051-0002	153-SB-050	1-1.5 ft	03/31/2010	JA43120	JA43120-1	Soil	X	X
153-SB-051-0204	153-SB-050	2-2.5 ft	03/31/2010	JA43120	JA43120-2	Soil	X	X
153-SB-052-0002	153-SB-052	1-1.5 ft	06/16/2010	JA49207	JA49207-1|JA49207-1A	Soil		X
153-SB-053-0002	153-SB-053	0-0.5 ft	06/16/2010	JA49207	JA49207-2R|JA49207-2RT	Soil		X
153-SB-053-0204	153-SB-053	3-3.5 ft	06/16/2010	JA49207	JA49207-3|JA49207-3A	Soil		X
153-SB-054-0002	153-SB-054	1-1.5 ft	06/16/2010	JA49207	JA49207-4R|JA49207-4RT	Soil		X
153-SB-054-0204	153-SB-054	3-3.5 ft	06/16/2010	JA49207	JA49207-5|JA49207-5A	Soil		X
153-SB-055-0204	153-SB-055	2.5-3 ft	07/26/2010	JA52306	JA52306-2|JA52306-2A|JA52306-2AR	Soil		X
153-SB-057-0002	153-SB-057	1-1.5 ft	12/21/2010	JA64809	JA64809-1AR|JA64809-1ART|JA64809-1ARTU	Soil	X	X
153-SB-057-0204	153-SB-057	2.5-3 ft	12/21/2010	JA64809	JA64809-2AR	Soil	X	X
153-SB-057-0406	153-SB-057	4.5-5 ft	12/21/2010	JA64809	JA64809-3AR|JA64809-3AT	Soil	X	X
153-SB-057-0608	153-SB-057	6-6.5 ft	12/21/2010	JA64809	JA64809-4AR|JA64809-4AT	Soil	X	X
153-SB-058-0002	153-SB-058	1-1.5 ft	12/15/2010	JA64253	JA64253-1AR|JA64253-1ART	Soil	X	X
153-SB-058-0204	153-SB-058	2.5-3 ft	12/15/2010	JA64253	JA64253-2|JA64253-2A	Soil	X	X
153-SB-058-0406	153-SB-058	4.5-5 ft	12/15/2010	JA64253	JA64253-3|JA64253-3A	Soil	X	X
153-SB-058-0608	153-SB-058	6.5-7 ft	12/15/2010	JA64253	JA64253-4|JA64253-4A	Soil	X	X

Prepared by: TG
Reviewed by: KK

TABLE 1B
SOIL BORINGS AND SAMPLE SUMMARY
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Field Sample ID	Location	Sample Depth (bgs)	Sample Date	Sample Delivery Group	Lab Sample ID	Matrix	Total Chromium	Hexavalent Chromium
153-SB-058-0810	153-SB-058	9-9.5 ft	12/15/2010	JA64253	JA64253-5|JA64253-5A	Soil	X	X
153-SB-058-1012	153-SB-058	10.5-11 ft	12/15/2010	JA64253	JA64253-6|JA64253-6A	Soil	X	X
153-SB-059-0002	153-SB-059	1-1.5 ft	12/15/2010	JA64253	JA64253-7|JA64253-7A	Soil	X	X
153-SB-059-0204	153-SB-059	3-3.5 ft	12/15/2010	JA64253	JA64253-8|JA64253-8A	Soil	X	X
153-SB-059-0406	153-SB-059	4.5-5 ft	12/15/2010	JA64253	JA64253-9AR|JA64253-9ART	Soil	X	X
153-SB-059-0608	153-SB-059	6.5-7 ft	12/15/2010	JA64253	JA64253-10AR|JA64253-10ART	Soil	X	X
153-SB-059-0810	153-SB-059	8.5-9 ft	12/15/2010	JA64253	JA64253-11AR|JA64253-11ART	Soil	X	X
153-SB-059-1012	153-SB-059	10.5-11 ft	12/15/2010	JA64253	JA64253-12AR|JA64253-12ART	Soil	X	X
153-SB-059-1214	153-SB-059	12.5-13 ft	12/15/2010	JA64253	JA64253-13|JA64253-13A	Soil	X	X
153-SB-060-0002	153-SB-060	0.5-1 ft	12/14/2010	JA64094	JA64094-1ART	Soil	X	X
153-SB-060-0204	153-SB-060	3-3.5 ft	12/14/2010	JA64094	|JA64094-2ART	Soil	X	X
153-SB-060-0406	153-SB-060	4-4.5 ft	12/14/2010	JA64094	JA64094-3ART	Soil	X	X
153-SB-060-0608	153-SB-060	6.5-7 ft	12/14/2010	JA64094	JA64094-4ART	Soil	X	X
153-SB-060-0810	153-SB-060	8-8.5 ft	12/14/2010	JA64094	JA64094-5ART	Soil	X	X
153-SB-060-1012	153-SB-060	10.5-11 ft	12/14/2010	JA64094	JA64094-6ART	Soil	X	X
153-SB-060-1214	153-SB-060	12.5-13 ft	12/14/2010	JA64094	JA64094-7ART	Soil	X	X
153-SB-061-0002	153-SB-061	1-1.5 ft	12/14/2010	JA64094	JA64094-8ART	Soil	X	X
153-SB-061-0204	153-SB-061	2.5-3 ft	12/14/2010	JA64094	JA64094-9ART	Soil	X	X
153-SB-061-0406	153-SB-061	4.5-5 ft	12/14/2010	JA64094	JA64094-10ART	Soil	X	X
153-SB-061-0608	153-SB-061	6.5-7 ft	12/14/2010	JA64094	JA64094-11ART	Soil	X	X
153-SB-061-0810	153-SB-061	8.5-9 ft	12/14/2010	JA64094	JA64094-12ART	Soil	X	X
153-SB-061-1012	153-SB-061	10-10.5 ft	12/14/2010	JA64094	JA64094-13ART	Soil	X	X
153-SB-062-0002	153-SB-062	1-1.5 ft	12/14/2010	JA64094	JA64094-14ART	Soil	X	X
153-SB-062-0204	153-SB-062	2.5-3 ft	12/14/2010	JA64094	JA64094-15ART	Soil	X	X
153-SB-062-0406	153-SB-062	4.5-5 ft	12/14/2010	JA64094	JA64094-16ART	Soil	X	X
153-SB-062-0608	153-SB-062	6.5-7 ft	12/14/2010	JA64094	JA64094-17ART	Soil	X	X
153-SB-062-0810	153-SB-062	8-8.5 ft	12/14/2010	JA64094	JA64094-18ART	Soil	X	X
153-SB-062-1012	153-SB-062	10.5-11 ft	12/14/2010	JA64094	JA64094-19ART	Soil	X	X
153-SB-063-0002	153-SB-063	1-1.5 ft	12/14/2010	JA64094	JA64094-20ART	Soil	X	X
153-SB-063-0204	153-SB-063	2.5-3 ft	12/14/2010	JA64094	JA64094-21ART	Soil	X	X
153-SB-063-0406	153-SB-063	4.5-5 ft	12/14/2010	JA64094	JA64094-22ART	Soil	X	X
153-SB-063-0608	153-SB-063	7-7.5 ft	12/14/2010	JA64094	JA64094-23ART	Soil	X	X
153-SB-063-0810	153-SB-063	8.5-9 ft	12/14/2010	JA64094	JA64094-24ART	Soil	X	X
153-SB-063-1012	153-SB-063	10.5-11 ft	12/14/2010	JA64094	JA64094-25|JA64094-25A	Soil	X	X
153-SB-063-1012DP	153-SB-063	10.5-11 ft	12/14/2010	JA64094	JA64094-26|JA64094-26A	Soil	X	X
153-SB-063-1214	153-SB-063	13-13.5 ft	12/14/2010	JA64094	JA64094-27|JA64094-27A	Soil	X	X
153-SB-064-0810	153-SB-064	9.5-10 ft	12/15/2010	JA64253	JA64253-14|JA64253-14A	Soil	X	X
153-SB-064-1012	153-SB-064	10.5-11 ft	12/15/2010	JA64253	JA64253-15|JA64253-15A	Soil	X	X
153-SB-065-0204	153-SB-065	2.5-3 ft	02/15/2011	JA68196	JA68196-2|JA68196-2A	Soil	X	X
153-SB-065-0406	153-SB-065	5-5.5 ft	02/15/2011	JA68196	JA68196-3|JA68196-3A|JA68196-3AR	Soil	X	X
153-SB-065-0608	153-SB-065	6.5-7 ft	02/15/2011	JA68196	JA68196-4|JA68196-4A|JA68196-4AR	Soil	X	X
153-SB-065-0810	153-SB-065	9-9.5 ft	02/15/2011	JA68196	JA68196-5|JA68196-5A|JA68196-5AR	Soil	X	X
153-SB-065-1012	153-SB-065	10.5-11 ft	02/15/2011	JA68196	JA68196-6|JA68196-6T|JA68196-6U	Soil	X	X
153-SB-066-0002	153-SB-066	1.5-2 ft	02/15/2011	JA68196	JA68196-7|JA68196-7T|JA68196-7U	Soil	X	X
153-SB-066-0204	153-SB-066	2.5-3 ft	02/15/2011	JA68196	JA68196-8|JA68196-8T|JA68196-8U	Soil	X	X
153-SB-066-0406	153-SB-066	5-5.5 ft	02/15/2011	JA68196	JA68196-9|JA68196-9T|JA68196-9U	Soil	X	X

Prepared by: TG
Reviewed by: KK

TABLE 1B
SOIL BORINGS AND SAMPLE SUMMARY
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Field Sample ID	Location	Sample Depth (bgs)	Sample Date	Sample Delivery Group	Lab Sample ID	Matrix	Total Chromium	Hexavalent Chromium
153-SB-066-0608	153-SB-066	6.5-7 ft	02/15/2011	JA68196	JA68196-10|JA68196-10T|JA68196-10U	Soil	X	X
153-SB-066-0810	153-SB-066	9-9.5 ft	02/15/2011	JA68196	JA68196-11|JA68196-11T|JA68196-11U	Soil	X	X
153-SB-066-1012	153-SB-066	10.5-11 ft	02/15/2011	JA68196	JA68196-12|JA68196-12T|JA68196-12U	Soil	X	X
153-SB-067-0002	153-SB-067	1-1.5 ft	02/15/2011	JA68196	JA68196-13|JA68196-13A	Soil	X	X
153-SB-067-0204	153-SB-067	2.5-3 ft	02/15/2011	JA68196	JA68196-14|JA68196-14A	Soil	X	X
153-SB-067-0406	153-SB-067	5-5.5 ft	02/15/2011	JA68196	JA68196-15|JA68196-15A|JA68196-15AR	Soil	X	X
153-SB-067-0608	153-SB-067	6.5-7 ft	02/15/2011	JA68196	JA68196-16|JA68196-16A|JA68196-16AR	Soil	X	X
153-SB-067-0810	153-SB-067	9-9.5 ft	02/15/2011	JA68196	JA68196-17|JA68196-17A|JA68196-17AR	Soil	X	X
153-SB-067-1012	153-SB-067	10.5-11 ft	02/15/2011	JA68196	JA68196-18|JA68196-18T|JA68196-18U	Soil	X	X
153-SB-067-1214	153-SB-067	12.5-13 ft	02/15/2011	JA68196	JA68196-19|JA68196-19A|JA68196-19AR	Soil	X	X
153-SB-068-0002	153-SB-068	1-1.5 ft	02/15/2011	JA68196	JA68196-20|JA68196-20T|JA68196-20U	Soil	X	X
153-SB-068-0204	153-SB-068	2.5-3 ft	02/15/2011	JA68196	JA68196-21|JA68196-21T|JA68196-21U	Soil	X	X
153-SB-068-0406	153-SB-068	5-5.5 ft	02/15/2011	JA68196	JA68196-22|JA68196-22T|JA68196-22U	Soil	X	X
153-SB-068-0608	153-SB-068	6.5-7 ft	02/15/2011	JA68196	JA68196-23|JA68196-23T|JA68196-23U	Soil	X	X
153-SB-068-0810	153-SB-068	9-9.5 ft	02/15/2011	JA68196	JA68196-24|JA68196-24T|JA68196-24U	Soil	X	X
153-SB-068-1012	153-SB-068	10.5-11 ft	02/15/2011	JA68196	JA68196-25|JA68196-25T|JA68196-25U	Soil	X	X
153-SB-068-1214	153-SB-068	12.5-13 ft	02/15/2011	JA68196	JA68196-26|JA68196-26T|JA68196-26U	Soil	X	X
153-SB-069-0001	153-SB-069	0.5-1 ft	05/20/2011	JA76376	JA76376-1AT|JA76376-1AU	Soil	X	X
153-SB-069-0405	153-SB-069	4-4.5 ft	05/20/2011	JA76376	JA76376-2|JA76376-2A|JA76376-2AR	Soil	X	X
153-SB-069-0607	153-SB-069	6.5-7 ft	05/20/2011	JA76376	JA76376-3|JA76376-3A|JA76376-3AR	Soil	X	X
153-SB-069-0809A	153-SB-069	8-8.5 ft	05/20/2011	JA76376	JA76376-4|JA76376-4A|JA76376-4AR	Soil	X	X
153-SB-070-0102	153-SB-070	1-1.5 ft	05/20/2011	JA76376	JA76376-7A|JA76376-7AR	Soil	X	X
153-SB-070-0405	153-SB-070	4.5-5 ft	05/20/2011	JA76376	JA76376-8|JA76376-8A|JA76376-8AR	Soil	X	X
153-SB-070-0607	153-SB-070	6-6.5 ft	05/20/2011	JA76376	JA76376-9|JA76376-9A|JA76376-9AR	Soil	X	X
153-SB-070-0910	153-SB-070	9-9.5 ft	05/20/2011	JA76376	JA76376-10|JA76376-10A|JA76376-10AR	Soil	X	X
153-SB-071-0102	153-SB-071	1.5-2 ft	05/20/2011	JA76376	JA76376-13AT|JA76376-13AU	Soil	X	X
153-SB-071-0203	153-SB-071	2.5-3 ft	05/20/2011	JA76376	JA76376-14|JA76376-14A|JA76376-14AR	Soil	X	X
153-SB-071-0405	153-SB-071	4.5-5 ft	05/20/2011	JA76376	JA76376-15|JA76376-15A|JA76376-15AR	Soil	X	X
153-SB-071-0405DUP	153-SB-071	4.5-5 ft	05/20/2011	JA76376	JA76376-16|JA76376-16A|JA76376-16AR	Soil	X	X
153-SB-071-0708	153-SB-071	7.5-8 ft	05/20/2011	JA76376	JA76376-17|JA76376-17A|JA76376-17AR	Soil	X	X
153-SB-071-0809	153-SB-071	8.5-9 ft	05/20/2011	JA76376	JA76376-18|JA76376-18A|JA76376-18AR	Soil	X	X
153-SB-072-0405	153-SB-072	4-4.5 ft	05/20/2011	JA76376	JA76376-22	Soil		X
153-SB-072-0708	153-SB-072	7-7.5 ft	05/20/2011	JA76376	JA76376-23	Soil		X
153-SB-072-0910	153-SB-072	9-9.5 ft	05/20/2011	JA76376	JA76376-24	Soil		X
153-SB-073-0405	153-SB-073	4-4.5 ft	05/20/2011	JA76376	JA76376-27	Soil		X
153-SB-073-0607	153-SB-073	6-6.5 ft	05/20/2011	JA76376	JA76376-28	Soil		X
153-SB-073-0809	153-SB-073	8-8.5 ft	05/20/2011	JA76376	JA76376-29	Soil		X
153-SB-074-0102	153-SB-074	1.5-2 ft	05/20/2011	JA76376	JA76376-38|JA76376-38A|JA76376-38AR	Soil	X	X
153-SB-074-0405	153-SB-074	4.5-5 ft	05/20/2011	JA76376	JA76376-39|JA76376-39A|JA76376-39AR	Soil	X	X
153-SB-074-0607	153-SB-074	6.5-7 ft	05/20/2011	JA76376	JA76376-40|JA76376-40A|JA76376-40AR	Soil	X	X
153-SB-074-0809	153-SB-074	8.5-9 ft	05/20/2011	JA76376	JA76376-41|JA76376-41A|JA76376-41AR	Soil	X	X
153-SB-075-0102	153-SB-075	1-1.5 ft	05/20/2011	JA76376	JA76376-30|JA76376-30A|JA76376-30AR	Soil	X	X
153-SB-075-0203	153-SB-075	2.5-3 ft	05/20/2011	JA76376	JA76376-31|JA76376-31A|JA76376-31AR	Soil	X	X
153-SB-076-0102	153-SB-076	1.5-2 ft	05/20/2011	JA76376	JA76376-32AT|JA76376-32AU	Soil	X	X
153-SB-076-0203	153-SB-076	2.5-3 ft	05/20/2011	JA76376	JA76376-33AT|JA76376-33AU	Soil	X	X
153-SB-077-0102	153-SB-077	1-1.5 ft	05/20/2011	JA76376	JA76376-34AT|JA76376-34AU	Soil	X	X

Prepared by: TG
Reviewed by: KK

TABLE 1B
SOIL BORINGS AND SAMPLE SUMMARY
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Field Sample ID	Location	Sample Depth (bgs)	Sample Date	Sample Delivery Group	Lab Sample ID	Matrix	Total Chromium	Hexavalent Chromium
153-SB-077-0203	153-SB-077	2.5-3 ft	05/20/2011	JA76376	JA76376-35AT|JA76376-35AU	Soil	X	X
153-SB-078-0102	153-SB-078	1-1.5 ft	05/20/2011	JA76376	JA76376-36AT	Soil	X	X
153-SB-078-0203	153-SB-078	2.5-3 ft	05/20/2011	JA76376	JA76376-37	Soil	X	X
153-SB-080-0002	153-SB-080	1-1.5 ft	06/22/2011	JA79270	JA79270-7	Soil	X	X
153-SB-080-0204	153-SB-080	2.5-3 ft	06/22/2011	JA79270	JA79270-8	Soil	X	X
153-SB-080-0406	153-SB-080	4.5-5 ft	06/22/2011	JA79270	JA79270-9	Soil	X	X
153-SB-080-0608	153-SB-080	7-7.5 ft	06/22/2011	JA79270	JA79270-10	Soil	X	X
153-SB-081-0002	153-SB-081	1.5-2 ft	06/22/2011	JA79270	JA79270-13|JA79270-13A|JA79270-13AR	Soil	X	X
153-SB-081-0204	153-SB-081	2-3 ft	06/22/2011	JA79270	JA79270-14|JA79270-14A|JA79270-14AR	Soil	X	X
153-SB-081-0406	153-SB-081	4.5-5 ft	06/22/2011	JA79270	JA79270-15|JA79270-15A|JA79270-15AR	Soil	X	X
153-SB-081-0608	153-SB-081	6-6.5 ft	06/22/2011	JA79270	JA79270-16|JA79270-16A|JA79270-16AR	Soil	X	X
153-SB-081-0810	153-SB-081	8.5-9 ft	06/22/2011	JA79270	JA79270-17|JA79270-17A|JA79270-17AR	Soil	X	X
153-SB-081-1012	153-SB-081	11.5-12 ft	06/22/2011	JA79270	JA79270-18|JA79270-18A|JA79270-18AR	Soil	X	X
153-SB-101-0204	153-SB-101	2-2.5 ft	05/02/2014	JB66205	JB66205-1|JB66205-1R	Soil		X
153-SB-101-0406	153-SB-101	4-4.5 ft	05/02/2014	JB66205	JB66205-2|JB66205-2R	Soil		X
153-SB-101-0608	153-SB-101	6-6.5 ft	05/02/2014	JB66205	JB66205-3|JB66205-3T	Soil		X
153-SB-101-0810	153-SB-101	8-8.5 ft	05/02/2014	JB66205	JB66205-4|JB66205-4T	Soil		X
153-SB-102-0204	153-SB-102	2-2.5 ft	05/02/2014	JB66205	JB66205-5|JB66205-5R	Soil		X
153-SB-102-0406	153-SB-102	4-4.5 ft	05/02/2014	JB66205	JB66205-6|JB66205-6R	Soil		X
153-SB-102-0406DP	153-SB-102	4-4.5 ft	05/05/2014	JB66205	JB66205-20|JB66205-20R	Soil		X
153-SB-102-0608	153-SB-102	6-6.5 ft	05/02/2014	JB66205	JB66205-7|JB66205-7R	Soil		X
153-SB-102-0810	153-SB-102	8-8.5 ft	05/02/2014	JB66205	JB66205-8|JB66205-8T	Soil		X
153-SB-103-0204	153-SB-103	2-2.5 ft	05/05/2014	JB66205	JB66205-9|JB66205-9R	Soil		X
153-SB-103-0406	153-SB-103	4-4.5 ft	05/05/2014	JB66205	JB66205-10|JB66205-10T	Soil		X
153-SB-103-0608	153-SB-103	6-6.5 ft	05/05/2014	JB66205	JB66205-11|JB66205-11T	Soil		X
153-SB-103-0810	153-SB-103	8-8.5 ft	05/05/2014	JB66205	JB66205-12|JB66205-12T	Soil		X
153-SB-104-0002	153-SB-104	1-1.5 ft	05/05/2014	JB66205	JB66205-13|JB66205-13T	Soil		X
153-SB-104-0204	153-SB-104	3-3.5 ft	05/05/2014	JB66205	JB66205-14|JB66205-14T	Soil		X
153-SB-104-0406	153-SB-104	5-5.5 ft	05/05/2014	JB66205	JB66205-15|JB66205-15T	Soil		X
153-SB-104-0608	153-SB-104	7-7.5 ft	05/05/2014	JB66205	JB66205-16|JB66205-16T	Soil		X
153-SB-104-0810	153-SB-104	9-9.5 ft	05/05/2014	JB66205	JB66205-17|JB66205-17T	Soil		X
153-SB-104-1012	153-SB-104	11-11.5 ft	05/05/2014	JB66205	JB66205-18|JB66205-18T	Soil		X
153-SB-104-1214	153-SB-104	12-12.5 ft	05/05/2014	JB66205	JB66205-19|JB66205-19T	Soil		X
153-SB-105-0001	153-SB-105	0.5-1 ft	06/12/2014	JB69293	JB69293-1|JB69293-1R	Soil		X
153-SB-105-0102	153-SB-105	1-1.5 ft	06/12/2014	JB69293	JB69293-2|JB69293-2R	Soil		X
153-SB-105-0203	153-SB-105	2-2.5 ft	06/12/2014	JB69293	JB69293-3|JB69293-3R	Soil		X
153-SB-105-0406	153-SB-105	4-4.5 ft	06/12/2014	JB69293	JB69293-4|JB69293-4R	Soil		X
153-SB-105-0608	153-SB-105	6-6.5 ft	06/12/2014	JB69293	JB69293-5|JB69293-5R	Soil		X
153-SB-106-0001	153-SB-106	0.5-1 ft	06/12/2014	JB69293	JB69293-6|JB69293-6R	Soil		X
153-SB-106-0102	153-SB-106	1-1.5 ft	06/12/2014	JB69293	JB69293-7|JB69293-7R	Soil		X
153-SB-107-0001	153-SB-107	0.5-1 ft	06/12/2014	JB69293	JB69293-8|JB69293-8R	Soil		X
153-SB-107-0102	153-SB-107	1-1.5 ft	06/12/2014	JB69293	JB69293-9|JB69293-9R	Soil		X
153-SB-107-0203	153-SB-107	2-2.5 ft	06/12/2014	JB69293	JB69293-10|JB69293-10R	Soil		X
153-SB-107-0406	153-SB-107	4-4.5 ft	06/12/2014	JB69293	JB69293-11|JB69293-11R	Soil		X
153-SB-107-0608	153-SB-107	6-6.5 ft	06/12/2014	JB69293	JB69293-12|JB69293-12R	Soil		X
153-SB-108-0001	153-SB-108	0.5-1 ft	06/13/2014	JB69293	JB69293-13T	Soil		X

Prepared by: TG
Reviewed by: KK

TABLE 1B
SOIL BORINGS AND SAMPLE SUMMARY
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Field Sample ID	Location	Sample Depth (bgs)	Sample Date	Sample Delivery Group	Lab Sample ID	Matrix	Total Chromium	Hexavalent Chromium
153-SB-108-0102	153-SB-108	1-1.5 ft	06/13/2014	JB69293	JB69293-14T	Soil		X
153-SB-109-0001	153-SB-109	0.5-1 ft	06/13/2014	JB69293	JB69293-15T|JB69293-15TU	Soil		X
153-SB-109-0102	153-SB-109	1-1.5 ft	06/13/2014	JB69293	JB69293-16T|JB69293-16TU	Soil		X
153-SB-109-0203	153-SB-109	2-2.5 ft	06/13/2014	JB69293	JB69293-17T	Soil		X
153-SB-109-0406	153-SB-109	4-4.5 ft	06/13/2014	JB69293	JB69293-18T	Soil		X
153-SB-110-0001	153-SB-110	0.5-1 ft	06/13/2014	JB69293	JB69293-19T|JB69293-19TU	Soil		X
153-SB-110-0102	153-SB-110	1-1.5 ft	06/13/2014	JB69293	JB69293-20T|JB69293-20TU	Soil		X
153-SB-110-0203	153-SB-110	2-2.5 ft	06/13/2014	JB69293	JB69293-21T|JB69293-21TU	Soil		X
153-SB-110-0406	153-SB-110	4-4.5 ft	06/13/2014	JB69293	JB69293-22T	Soil		X
153-SB-110-0608	153-SB-110	6-6.5 ft	06/13/2014	JB69293	JB69293-23T|JB69293-23TU	Soil		X
153-SB-111-0001	153-SB-111	0.5-1 ft	06/13/2014	JB69293	JB69293-24T	Soil		X
153-SB-111-0102	153-SB-111	1-1.5 ft	06/13/2014	JB69293	JB69293-25T|JB69293-25TU	Soil		X
153-SB-111-0203	153-SB-111	2-2.5 ft	06/13/2014	JB69293	JB69293-26T	Soil		X
153-SB-111-0406	153-SB-111	4-4.5 ft	06/13/2014	JB69293	JB69293-27T	Soil		X
153-SB-111-0608	153-SB-111	6-6.5 ft	06/13/2014	JB69293	JB69293-28T|JB69293-28TU	Soil		X
153-SB-112-0002	153-SB-112	1-1.5 ft	07/24/2014	JB72591	JB72591-1|JB72591-1A|JB72591-1AR	Soil	X	X
153-SB-112-0204	153-SB-112	2-2.5 ft	07/24/2014	JB72591	JB72591-2|JB72591-2A|JB72591-2AR	Soil	X	X
153-SB-112-0204DP	153-SB-112	2-2.5 ft	07/24/2014	JB72591	JB72591-7|JB72591-7A	Soil	X	X
153-SB-112-0406	153-SB-112	4-4.5 ft	07/24/2014	JB72591	JB72591-3|JB72591-3A	Soil	X	X
153-SB-112-0608	153-SB-112	7.5-8 ft	07/24/2014	JB72591	JB72591-4|JB72591-4A|JB72591-4AR	Soil	X	X
153-SB-112-0810	153-SB-112	8-8.5 ft	07/24/2014	JB72591	JB72591-5|JB72591-5A|JB72591-5AR	Soil	X	X
153-SB-112-1012	153-SB-112	10.5-11 ft	07/24/2014	JB72591	JB72591-6|JB72591-6A|JB72591-6AR	Soil	X	X
153-SB-113-0002	153-SB-113	1.5-2 ft	07/24/2014	JB72591	JB72591-8|JB72591-8A|JB72591-8AR	Soil	X	X
153-SB-113-0204	153-SB-113	2.5-3 ft	07/24/2014	JB72591	JB72591-9|JB72591-9A|JB72591-9AR	Soil	X	X
153-SB-113-0406	153-SB-113	4.5-5 ft	07/24/2014	JB72591	JB72591-10|JB72591-10A|JB72591-10AR	Soil	X	X
153-SB-113-0406DP	153-SB-113	4.5-5 ft	07/24/2014	JB72591	JB72591-14|JB72591-14A|JB72591-14AR	Soil	X	X
153-SB-113-0608	153-SB-113	6.5-7 ft	07/24/2014	JB72591	JB72591-11|JB72591-11A|JB72591-11AR	Soil	X	X
153-SB-113-0810	153-SB-113	8.5-9 ft	07/24/2014	JB72591	JB72591-12|JB72591-12A|JB72591-12AR	Soil	X	X
153-SB-113-1012	153-SB-113	10-10.5 ft	07/24/2014	JB72591	JB72591-13|JB72591-13A|JB72591-13AR	Soil	X	X
153-SB-114-0608	153-SB-114	6.5-7 ft	07/24/2014	JB72591	JB72591-24T|JB72591-24TU	Soil	X	X
153-SB-115-0204	153-SB-115	2.5-3 ft	07/24/2014	JB72591	JB72591-16T|JB72591-16TU	Soil	X	X
153-SB-115-0406	153-SB-115	4-4.5 ft	07/24/2014	JB72591	JB72591-17T|JB72591-17TU	Soil	X	X
153-SB-115-0608	153-SB-115	6.5-7 ft	07/24/2014	JB72591	JB72591-18T|JB72591-18TU	Soil	X	X
153-SB-115-0810	153-SB-115	8.5-9 ft	07/24/2014	JB72591	JB72591-19T|JB72591-19TU	Soil	X	X
153-MW-2-042611	153-MW-2		04/26/2011	JA74099	JA74099-2	Water	X	X
153-MW-2-042611F	153-MW-2		04/26/2011	JA74099	JA74099-2F	Water	X	X
153-MW-2-101910	153-MW-2		10/19/2010	JA59191	JA59191-3|JA59191-3F	Water	X	X
153-MW-5-042611	153-MW-5		04/26/2011	JA74099	JA74099-1	Water	X	X
153-MW-5-042611F	153-MW-5		04/26/2011	JA74099	JA74099-1F	Water	X	X
153-MW-5-101910	153-MW-5		10/19/2010	JA59191	JA59191-1|JA59191-1F	Water	X	X
153-MW-5-101910DP	153-MW-5		10/19/2010	JA59191	JA59191-2	Water	X	X
153-MW-5-101910DPF	153-MW-5		10/19/2010	JA59191	JA59191-2F	Water	X	X
153-MW-A13-01	153-MW-A13		01/06/1999	FIELD|K5041|K535	|106184	Water	X	X
153-MW-A13-01-F	153-MW-A13		01/06/1999	K5041|K535	106188	Water	X	X
153-MW-A13-02	153-MW-A13		07/20/1999	FIELD|R4431|R635	|145041	Water	X	X
153-MW-A13-02-F	153-MW-A13		07/20/1999	R4431|R635	145045	Water	X	X

Prepared by: TG
Reviewed by: KK

TABLE 1B
SOIL BORINGS AND SAMPLE SUMMARY
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Field Sample ID	Location	Sample Depth (bgs)	Sample Date	Sample Delivery Group	Lab Sample ID	Matrix	Total Chromium	Hexavalent Chromium
153-MW-A13-071906-1	153-MW-A13		07/19/2006	J36122	J36122-3	Water	X	X
153-MW-A13-071906-1F	153-MW-A13		07/19/2006	J36122	J36122-3F	Water	X	X
153-MW-A13-092611	153-MW-A13		09/26/2011	JA87257	JA87257-5	Water	X	X
153-MW-A13-101910	153-MW-A13		10/19/2010	JA59163	JA59163-1	Water	X	X
153-MW-A13-101910F	153-MW-A13		10/19/2010	JA59163	JA59163-1F	Water	X	X
153-MW-A13-F	153-MW-A13		04/14/2003	H7101|H753	421755	Water	X	X
153-MW-A13F-092611	153-MW-A13		09/26/2011	JA87257	JA87257-5F	Water	X	X
153-MW-A15	153-MW-A15		04/14/2003	H7101|H753	421760	Water	X	X
153-MW-A15-01	153-MW-A15		05/26/1999	FIELD|P889|P8891	|134059	Water	X	X
153-MW-A15-01-F	153-MW-A15		05/26/1999	P889|P8891	134063	Water	X	X
153-MW-A15-02	153-MW-A15		07/14/1999	FIELD|R443|R4431	|143592	Water	X	X
153-MW-A15-02-F	153-MW-A15		07/14/1999	R443|R4431	143596	Water	X	X
153-MW-A15-071806-1	153-MW-A15		07/18/2006	J35983	J35983-1	Water	X	X
153-MW-A15-071806-1F	153-MW-A15		07/18/2006	J35983	J35983-1F	Water	X	X
153-MW-A15-092311	153-MW-A15		09/23/2011	JA87096	JA87096-1	Water	X	X
153-MW-A15-092311F	153-MW-A15		09/23/2011	JA87096	JA87096-1F	Water	X	X
153-MW-A15-101910	153-MW-A15		10/19/2010	JA59163	JA59163-2	Water	X	X
153-MW-A15-101910DP	153-MW-A15		10/19/2010	JA59163	JA59163-3	Water	X	X
153-MW-A15-101910DPF	153-MW-A15		10/19/2010	JA59163	JA59163-3F	Water	X	X
153-MW-A15-101910F	153-MW-A15		10/19/2010	JA59163	JA59163-2F	Water	X	X
153-TWP-001-031610	153-TWP-001		03/16/2010	JA41930	JA41930-1|JA41930-1F	Water	X	X
153-TWP-001DP-031610	153-TWP-001		03/16/2010	JA41930	JA41930-4|JA41930-4F	Water	X	X
153-TWP-002-031610	153-TWP-002		03/16/2010	JA41930	JA41930-2|JA41930-2F	Water	X	X
153-TWP-003-031610	153-TWP-003		03/16/2010	JA41930	JA41930-3|JA41930-3F	Water	X	X
153-TWP-004-092611	153-TWP-004		09/26/2011	JA87257	JA87257-1	Water	X	X
153-TWP-004-092611F	153-TWP-004		09/26/2011	JA87257	JA87257-1F	Water	X	X
153-TWP-005-092611	153-TWP-005		09/26/2011	JA87257	JA87257-2	Water	X	X
153-TWP-005-092611F	153-TWP-005		09/26/2011	JA87257	JA87257-2F	Water	X	X
153-TWP-006-092611	153-TWP-006		09/26/2011	JA87257	JA87257-3	Water	X	X
153-TWP-006-092611F	153-TWP-006		09/26/2011	JA87257	JA87257-3F	Water	X	X

Analytical Methods - Soil

Total Chromium = USEPA Method 200.7

Hexavalent Chromium = USEPA Method 7199

Analytical Methods - Water

Total Chromium = USEPA Method 200.7

Hexavalent Chromium = USEPA Method 7199

Prepared by: TG
Reviewed by: KK

TABLE 2

MONITORING WELL SUMMARY AND GROUNDWATER ELEVATION DATA

STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE

JERSEY CITY, NEW JERSEY

MONITORING WELL CONSTRUCTION INFORMATION

Well ID	NJDEP Well Permit No.	Date Installed	Well Diameter/Type	Top of Casing Elevation (MSL)[2]	Screen Interval (feet bgs)	Well Depth (feet bgs)
153-MW-A13	2652440	12/4/1998	2" PVC	9.62	4 to 10	10
153-MW-A15	2653343	4/30/1999	2" PVC	11.00	3 to 13	13
153-MW-A13T	2653342	5/4/1999	2" PVC	9.34	43 to 58	58
153-MW-05	E201011711	10/5/2010	2" PVC	11.12	5 to 12	12

Notes:

1. Well data for 153-MW-A13, A15, A13T from Draft RI Report for SA-5 1999 (TetraTech NUS, 1999).
   Well data for 153-MW-05 from Shallow Offsite Groundwater Delineation Report for SA-5 and SA-6 South (Mactec, 2011).
2. Elevations relative to mean seal level (MSL). Elevation Datum NAD 1983.
3. Feet below ground surface (bgs).

GROUNDWATER ELEVATION DATA - OCTOBER 19, 2010

Well ID	Northing[1]	Easting[1]	Depth to Water[2] (feet TIC[3])	TIC Elevation (feet NAVD[4])	Groundwater Elevation (feet NAVD)
153-MW-A13	683671.0	603210.92	5.67	8.42	2.75
153-MW-A15	683365.89	603149.27	8.17	9.80	1.63
153-MW-05	683167.8	603501.1	7.05	9.92	2.87
117-MW-A89	683955.12	603352.41	8.40	11.95	3.55
117-MW-A14	683739.15	603669.37	11.75	16.13	4.38

Notes:

1. New Jersey State Plane Coordinates relative to North American Datum (NAD) of 1983
2. Water levels gauged during synoptic round on October 19, 2010
3. Feet TIC: depth in feet below top of inner casing/well riser
4. TIC elevations are converted to North American Vertical Datum (NAVD) of 1988 by subtracting 1.2 ft from datum in the Final Groundwater Investigation Report - Honeywell Study Area 7 (HydroQual, February 2007) or surveyed by Maser Consulting in November 2010
5. Site 117 shallow wells included for reference

Prepared by: TG
Checked by: EB

TABLE 3
SOIL SAMPLE RESULTS - TOTAL AND HEXAVALENT CHROMIUM
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Location ID	Field Sample ID	Date Sampled	Lab Sample ID	Depth	Hexavalent Chromium (mg/kg)		Total Chromium (mg/kg)	
153-SB-001	153-SB-001-0002	6/10/2009	JA20750-1A	1-1.5 ft	1.7	U	23	J
153-SB-001	153-SB-001-0204	6/10/2009	JA20750-2A	3.5-4 ft	2.1	U	13.8	J
153-SB-001	153-SB-001-0406	6/10/2009	JA20750-3A	5-5.5 ft	2	U	20.5	J
153-SB-001	153-SB-001-0608	6/10/2009	JA20750-4A	7-7.5 ft	2.2	U	36.6	J
153-SB-001	153-SB-001-0810	6/10/2009	JA20750-5A	8.5-9 ft	12.5		207	J
153-SB-003	153-SB-003-0002	6/10/2009	JA20750-15A	1-1.5 ft	1.9	U	92.6	J
153-SB-003	153-SB-003-0204	6/10/2009	JA20750-16A	2.5-3 ft	5.9		18.8	J
153-SB-003	153-SB-003-0406	6/10/2009	JA20750-17A	4-4.5 ft	1.8	U	37.3	J
153-SB-003	153-SB-003-0608	6/10/2009	JA20750-18A	6-6.5 ft	2.1	U	28.3	J
153-SB-003	153-SB-003-0810	6/10/2009	JA20750-19A	9-9.5 ft	1.9	U	15.4	J
153-SB-005	153-SB-005-0002	6/10/2009	JA20750-27A	1.5-2 ft	1.9	U	36.6	J
153-SB-005	153-SB-005-0204	6/10/2009	JA20750-28A	2.5-3 ft	3		48.1	J
153-SB-005	153-SB-005-0406	6/10/2009	JA20750-29A	4.5-5 ft	2.5	U	149	J
153-SB-005	153-SB-005-0608	6/10/2009	JA20750-30A	6-6.5 ft	2.3	U	37.9	J
153-SB-005	153-SB-005-0810	6/10/2009	JA20750-31A	8-8.5 ft	5.4	U	37800	J
153-SB-005	153-SB-005-1012	6/10/2009	JA20750-32A	10.5-11 ft	2.3	U	9.8	J
153-SB-007	153-SB-007-0002	6/10/2009	JA20750-40A	1-1.5 ft	1.8	U	22.4	J
153-SB-007	153-SB-007-0204	6/10/2009	JA20750-41A	3-3.5 ft	4.5		58.4	J
153-SB-007	153-SB-007-0406	6/10/2009	JA20750-42A	4-4.5 ft	2	U	83	J
153-SB-007	153-SB-007-0608	6/10/2009	JA20750-43A	6-6.5 ft	11.9		751	J
153-SB-007	153-SB-007-0810	6/10/2009	JA20750-44A	8-8.5 ft	2.1	U	1850	
153-SB-007	153-SB-007-1012	6/10/2009	JA20750-45A	10-10.5 ft	19.6		35.4	
153-SB-007	153-SB-007-1012DP	6/10/2009	JA20750-46A	10-10.5 ft DP	15	U	281	
153-SB-008	153-SB-008-0002	6/10/2009	JA20750-47R	1.5-2 ft	0.96	U	49.8	
153-SB-008	153-SB-008-0204	6/10/2009	JA20750-48R	3.5-4 ft	1.1	U	51	
153-SB-008	153-SB-008-0406	6/10/2009	JA20750-49R	4.5-5 ft	1.1	U	23.3	
153-SB-008	153-SB-008-0608	6/10/2009	JA20750-50R	6.5-7 ft	1.2	U	78.4	
153-SB-008	153-SB-008-0810	6/10/2009	JA20750-51R	8.5-9 ft	1.2	U	408	
153-SB-008	153-SB-008-1012	6/10/2009	JA20750-52R	10.5-11 ft	3.4	U	24.7	
153-SB-009	153-SB-009-0002	6/10/2009	JA20750-53A	0.5-1 ft	1.8	U	23.5	
153-SB-009	153-SB-009-0204	6/10/2009	JA20750-54A	3-3.5 ft	1.9	U	382	
153-SB-009	153-SB-009-0406	6/10/2009	JA20750-55A	4.5-5 ft	1.1		122	
153-SB-009	153-SB-009-0608	6/10/2009	JA20750-56A	6.5-7 ft	2.1	U	303	
153-SB-009	153-SB-009-0810	6/10/2009	JA20750-57A	8.5-9 ft	4.1	U	97.4	
153-SB-009	153-SB-009-1012DP	6/10/2009	JA20750-60A	8.5-9 ft DP	4.1	U	787	
153-SB-009	153-SB-009-1012	6/10/2009	JA20750-58A	10-10.5 ft	6.3	U	147	
153-SB-009	153-SB-009-1214	6/10/2009	JA20750-59A	12.5-13 ft	15	U	8.3	
153-SB-011	153-SB-011-0002	3/16/2010	JA41933-25A	1-1.5 ft	1.8		79.3	J
153-SB-011	153-SB-011-0204	3/16/2010	JA41933-26A	2.5-3 ft	**1040**	J	14600	J
153-SB-011	153-SB-011-0406	3/16/2010	JA41933-27A	4.5-5 ft	**50.9**		764	J
153-SB-011	153-SB-011-0608	3/16/2010	JA41933-28A	6-6.5 ft	**59.6**		3080	J
153-SB-011	153-SB-011-0608DP	3/16/2010	JA41933-35A	6-6.5 ft DP	**62.4**		1720	J
153-SB-011	153-SB-011-0810	3/16/2010	JA41933-29A	9-9.5 ft	**69.7**		4280	J
153-SB-011	153-SB-011-1012	3/16/2010	JA41933-30A	10.5-11 ft	1.6		192	J
153-SB-011	153-SB-011-1214	3/16/2010	JA41933-31A	12-12.5 ft	0.95	U	25	J
153-SB-011	153-SB-011-1416	3/16/2010	JA41933-32A	15-15.5 ft	0.93		28.7	J

Prepared by: TG
Checked by: EB

TABLE 3
SOIL SAMPLE RESULTS - TOTAL AND HEXAVALENT CHROMIUM
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Location ID	Field Sample ID	Date Sampled	Lab Sample ID	Depth	Hexavalent Chromium (mg/kg)		Total Chromium (mg/kg)	
153-SB-012	153-SB-012-0002	3/16/2010	JA41933-15A	1-1.5 ft	10.3	J	263	J
153-SB-012	153-SB-012-0204	3/16/2010	JA41933-16A	2.5-3 ft	**1060**	J	7080	J
153-SB-012	153-SB-012-0406	3/16/2010	JA41933-17A	4.5-5 ft	**24.9**		570	J
153-SB-012	153-SB-012-0608	3/16/2010	JA41933-18A	6-6.5 ft	**33.7**	J	1450	J
153-SB-012	153-SB-012-0810	3/16/2010	JA41933-19A	8.5-9 ft	**28.1**		2230	J
153-SB-012	153-SB-012-1012	3/16/2010	JA41933-20A	10.5-11 ft	1.7	U	1310	J
153-SB-012	153-SB-012-1214	3/16/2010	JA41933-21A	13.5-14 ft	0.97	U	20.5	J
153-SB-012	153-SB-012-1416	3/16/2010	JA41933-22A	14-14.5 ft	14.1		42.8	J
153-SB-013	153-SB-013-0002	3/15/2010	JA41884-36A	1-1.5 ft	9.2		272	J
153-SB-013	153-SB-013-0204	3/15/2010	JA41884-37A	2-2.5 ft	**196**		2410	J
153-SB-013	153-SB-013-0406	3/15/2010	JA41884-38A	4.5-5 ft	13.6		84.2	J
153-SB-013	153-SB-013-0608	3/15/2010	JA41884-39A	6.5-7 ft	**25.7**		702	J
153-SB-013	153-SB-013-0810	3/15/2010	JA41884-40A	9-9.5 ft	17.5		1230	J
153-SB-013	153-SB-013-1012	3/15/2010	JA41884-41A	10-10.5 ft	4.3	J	78800	J
153-SB-014	153-SB-014-0002	3/15/2010	JA41884-65A	1-1.5 ft	7	J	293	J
153-SB-014	153-SB-014-0204	3/15/2010	JA41884-66A	2-2.5 ft	14.8	J	628	J
153-SB-014	153-SB-014-0406	3/15/2010	JA41884-67A	5-5.5 ft	18.6	J	292	J
153-SB-014	153-SB-014-0608	3/15/2010	JA41884-68A	6.5-7 ft	**81.4**		2200	J
153-SB-014	153-SB-014-0810	3/15/2010	JA41884-69A	8.5-9 ft	**208**		1670	J
153-SB-014	153-SB-014-1012	3/15/2010	JA41884-70A	10.5-11 ft	**189**	J	1890	J
153-SB-015	153-SB-015-0002	3/16/2010	JA41933-1A	1-1.5 ft	10.8	J	132	J
153-SB-015	153-SB-015-0204	3/16/2010	JA41933-2A	2-2.5 ft	11.8	J	375	J
153-SB-015	153-SB-015-0406	3/16/2010	JA41933-3A	4-4.5 ft	**121**		10100	J
153-SB-015	153-SB-015-0608	3/16/2010	JA41933-4A	6.5-7 ft	**56.9**	J	698	J
153-SB-015	153-SB-015-0810	3/16/2010	JA41933-5A	9-9.5 ft	**111**		3040	J
153-SB-015	153-SB-015-1012	3/16/2010	JA41933-6A	11-11.5 ft	**128**	J	4030	J
153-SB-015	153-SB-015-1214	3/16/2010	JA41933-7A	12.5-13 ft	**399**	J	89400	J
153-SB-015	153-SB-015-1416	3/16/2010	JA41933-8A	15-15.5 ft	**149**	J	38800	J
153-SB-015	153-SB-015-1618	3/16/2010	JA41933-9A	16-16.5 ft	17.1		965	J
153-SB-015	153-SB-015-1820	3/16/2010	JA41933-10A	18-18.5 ft	15.6		853	J
153-SB-015	153-SB-015-1820DP	3/16/2010	JA41933-14A	18-18.5 ft DP	13.5		660	J
153-SB-015	153-SB-015-2022	3/16/2010	JA41933-11A	20-21 ft	17.2		498	J
153-SB-015	153-SB-015-2224	3/16/2010	JA41933-12A	22.5-23 ft	9		324	J
153-SB-016	153-SB-016-0002	3/15/2010	JA41884-21A	1-1.5 ft	19.3		560	J
153-SB-016	153-SB-016-0002DP	3/15/2010	JA41884-34A	1-1.5 ft DP	8.9		71.4	J
153-SB-016	153-SB-016-0204	3/15/2010	JA41884-22A	2.5-3 ft	9.8		90.3	J
153-SB-016	153-SB-016-0204DP	3/15/2010	JA41884-35A	2.5-3 ft DP	8.9		44.5	J
153-SB-016	153-SB-016-0406	3/15/2010	JA41884-23A	5-5.5 ft	7.6		223	J
153-SB-016	153-SB-016-0608	3/15/2010	JA41884-24A	6-6.5 ft	**38.4**		729	J
153-SB-016	153-SB-016-0810	3/15/2010	JA41884-25A	8-8.5 ft	**109**		4080	J
153-SB-016	153-SB-016-1012	3/15/2010	JA41884-26A	10.5-11 ft	**160**		6790	J
153-SB-016	153-SB-016-1214	3/15/2010	JA41884-27A	12-12.5 ft	**151**		10000	J
153-SB-016	153-SB-016-1416	3/15/2010	JA41884-28A	14.5-15 ft	**153**		18100	J
153-SB-016	153-SB-016-1618	3/15/2010	JA41884-29A	16.5-17 ft	**54**		1000	J
153-SB-016	153-SB-016-1820	3/15/2010	JA41884-30A	18.5-19 ft	**59.4**		2020	J
153-SB-016	153-SB-016-2022	3/15/2010	JA41884-31A	20.5-21 ft	13		357	J
153-SB-016	153-SB-016-2224	3/15/2010	JA41884-32A	23.5-24 ft	1	J	24.6	J

Prepared by: TG
Checked by: EB

TABLE 3
SOIL SAMPLE RESULTS - TOTAL AND HEXAVALENT CHROMIUM
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Location ID	Field Sample ID	Date Sampled	Lab Sample ID	Depth	Hexavalent Chromium (mg/kg)		Total Chromium (mg/kg)	
153-SB-017	153-SB-017-0002	3/15/2010	JA41884-8A	0.5-1 ft	0.45	UJ	167	J
153-SB-017	153-SB-017-0204	3/15/2010	JA41884-9A	3-3.5 ft	**20.6**		105	J
153-SB-017	153-SB-017-0406	3/15/2010	JA41884-10A	4-4.5 ft	**21.4**		133	J
153-SB-017	153-SB-017-0608	3/15/2010	JA41884-11A	6.5-7 ft	19.4	J	1820	J
153-SB-017	153-SB-017-0810	3/15/2010	JA41884-12A	8-8.5 ft	**71.7**		5090	J
153-SB-017	153-SB-017-1012	3/15/2010	JA41884-13A	10-10.5 ft	**128**		7560	J
153-SB-017	153-SB-017-1214	3/15/2010	JA41884-14A	13.5-14 ft	**29.8**	J	36700	J
153-SB-017	153-SB-017-1416	3/15/2010	JA41884-15A	15-15.5 ft	**31.3**		1100	J
153-SB-017	153-SB-017-1618	3/15/2010	JA41884-16A	16-16.5 ft	9.5	J	176	J
153-SB-017	153-SB-017-1820	3/15/2010	JA41884-17A	19.5-20 ft	8.3	J	316	J
153-SB-017	153-SB-017-2022	3/15/2010	JA41884-18A	20-20.5 ft	1.7	J	38.7	J
153-SB-017	153-SB-017-2224	3/15/2010	JA41884-19A	22.5-23 ft	0.87	J	15	J
153-SB-018	153-SB-018-0002	3/15/2010	JA41884-58A	1-1.5 ft	2.4		19.3	
153-SB-018	153-SB-018-0204	3/15/2010	JA41884-59A	2.5-3 ft	**115**		2140	
153-SB-018	153-SB-018-0406	3/15/2010	JA41884-60A	4.5-5 ft	**44**		491	
153-SB-018	153-SB-018-0608	3/15/2010	JA41884-61A	7-7.5 ft	**64.1**	J	1000	
153-SB-018	153-SB-018-0810	3/15/2010	JA41884-62A	8.5-9 ft	18.5		1350	
153-SB-018	153-SB-018-1012	3/15/2010	JA41884-63A	10.5-11 ft	**42.1**		790	
153-SB-019	153-SB-019-0002	3/15/2010	JA41884-1A	1-1.5 ft	8.8		154	J
153-SB-019	153-SB-019-0204	3/15/2010	JA41884-2A	3-3.5 ft	7.8	J	241	J
153-SB-019	153-SB-019-0406	3/15/2010	JA41884-3A	4.5-5 ft	4.6		252	J
153-SB-019	153-SB-019-0608	3/15/2010	JA41884-4A	6-6.5 ft	**36.1**	J	975	J
153-SB-019	153-SB-019-0810	3/15/2010	JA41884-5A	9-9.5 ft	**83.1**	J	1600	J
153-SB-019	153-SB-019-1012	3/15/2010	JA41884-6A	11.5-12 ft	0.98		965	J
153-SB-020	153-SB-020-0002	3/15/2010	JA41884-51A	1-1.5 ft	**139**		1690	
153-SB-020	153-SB-020-0204	3/15/2010	JA41884-52A	2.5-3 ft	**25.5**		192	
153-SB-020	153-SB-020-0406	3/15/2010	JA41884-53A	4.5-5 ft	12.9		900	
153-SB-020	153-SB-020-0608	3/15/2010	JA41884-54A	6.5-7 ft	**50**	J	847	
153-SB-021	153-SB-021-0002	3/16/2010	JA42072-1A	1.5-2 ft	4.7		83.3	J
153-SB-021	153-SB-021-0204	3/16/2010	JA42072-2A	3-3.5 ft	16		269	J
153-SB-021	153-SB-021-0406	3/16/2010	JA42072-3A	4.5-5 ft	**60.9**		1320	J
153-SB-021	153-SB-021-0608	3/16/2010	JA42072-4A	6.5-7 ft	1.1	J	4940	J
153-SB-021	153-SB-021-0810	3/16/2010	JA42072-5A	8.5-9 ft	0.84	J	8340	J
153-SB-021	153-SB-021DP-0810	3/16/2010	JA42072-8A	8.5-9 ft DP	1.2	UJ	3500	J
153-SB-021	153-SB-021-1012	3/16/2010	JA42072-6A	10.5-11 ft	1.6	UJ	461	J
153-SB-022	153-SB-022-0406	3/12/2010	JA41735-1A	4.5-5 ft	**389**		3140	J
153-SB-022	153-SB-022-0608	3/12/2010	JA41735-2A	6.5-7 ft	**2950**		11700	J
153-SB-022	153-SB-022-0810	3/12/2010	JA41735-3A	9-9.5 ft	1.8	U	11100	J
153-SB-023	153-SB-023-0406	3/12/2010	JA41735-6A	5-5.5 ft	**269**		13300	J
153-SB-023	153-SB-023-0608	3/12/2010	JA41735-7A	6-6.5 ft	**435**		10600	J
153-SB-023	153-SB-023-0810	3/12/2010	JA41735-8A	8-8.5 ft	5.2		33000	J
153-SB-023	153-SB-023DP-1012	3/12/2010	JA41735-10A	10.5-11 ft DP	1.4	U	68	J
153-SB-023	153-SB-023-1012	3/12/2010	JA41735-9A	10.5-11 ft	1.9		91.3	J
153-SB-024	153-SB-024-0406	3/12/2010	JA41735-12A	4-4.5 ft	**84.3**		2440	J
153-SB-024	153-SB-024-0608	3/12/2010	JA41735-13A	6.5-7 ft	12.7		69.6	J
153-SB-024	153-SB-024-0810	3/12/2010	JA41735-14A	8.5-9 ft	2.2	U	1170	J
153-SB-024	153-SB-024-1012	3/12/2010	JA41735-15A	10.5-11 ft	1.1		17.3	J

Prepared by: TG
Checked by: EB

TABLE 3
SOIL SAMPLE RESULTS - TOTAL AND HEXAVALENT CHROMIUM
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Location ID	Field Sample ID	Date Sampled	Lab Sample ID	Depth	Hexavalent Chromium (mg/kg)		Total Chromium (mg/kg)	
153-SB-025	153-SB-025-0002	3/15/2010	JA41884-44A	1-1.5 ft	1.5		20.1	J
153-SB-025	153-SB-025-0204	3/15/2010	JA41884-45A	2.5-3 ft	0.45	U	9.4	J
153-SB-025	153-SB-025-0406	3/15/2010	JA41884-46A	4.5-5 ft	0.66	J	11.6	J
153-SB-025	153-SB-025-0608	3/15/2010	JA41884-47A	6.5-7 ft	**104**		1090	
153-SB-025	153-SB-025-0810	3/15/2010	JA41884-48A	9-9.5 ft	1.2		44.3	
153-SB-025	153-SB-025-1012	3/15/2010	JA41884-49A	10-10.5 ft	**92.5**		1070	
153-SB-026	153-SB-026-0002	3/16/2010	JA41933-36A	1-1.5 ft	2.3	J	29.5	J
153-SB-026	153-SB-026DP-0002	3/16/2010	JA41933-43A	1-1.5 ft DP	0.92	UJ	26.7	J
153-SB-026	153-SB-026-0204	3/16/2010	JA41933-37A	2.5-3 ft	1.1	J	9.9	J
153-SB-026	153-SB-026-0406	3/16/2010	JA41933-38A	4-4.5 ft	1	UJ	8.8	J
153-SB-026	153-SB-026-0608	3/16/2010	JA41933-39A	6.5-7 ft	**33**	J	918	J
153-SB-026	153-SB-026-0810	3/16/2010	JA41933-40A	8-8.5 ft	**31.6**	J	1420	J
153-SB-026	153-SB-026-1012	3/16/2010	JA41933-41A	10-10.5 ft	**39.9**	J	1530	J
153-SB-027	153-SB-027-0002	3/17/2010	JA42072-21A	1-1.5 ft	2.1		24.9	J
153-SB-027	153-SB-027-0204	3/17/2010	JA42072-22A	2-2.5 ft	3.3		14	J
153-SB-027	153-SB-027-0406	3/17/2010	JA42072-23A	3.5-4 ft	4.2		49.9	J
153-SB-027	153-SB-027-0608	3/17/2010	JA42072-24A	6-6.5 ft	0.53	U	101	J
153-SB-027	153-SB-027-0810	3/17/2010	JA42072-25A	8-8.5 ft	9.3		310	
153-SB-027	153-SB-027-1012	3/17/2010	JA42072-26A	10.5-11 ft	5.2	J	22100	
153-SB-027	153-SB-027-1214	3/17/2010	JA42072-27A	12.5-13 ft	3.9	J	12300	
153-SB-028	153-SB-028-0002	3/17/2010	JA42072-17A	1-1.5 ft	1.1	J	13.4	J
153-SB-028	153-SB-028-0204	3/17/2010	JA42072-18A	2.5-3 ft	0.99	UJ	65.7	J
153-SB-029	153-SB-029-0002	3/17/2010	JA42072-9A	0.5-1 ft	10	J	485	J
153-SB-029	153-SB-029-0204	3/17/2010	JA42072-10A	2-2.5 ft	16.2	J	160	J
153-SB-029	153-SB-029-0406	3/17/2010	JA42072-11A	5-5.5 ft	**117**	J	5100	J
153-SB-029	153-SB-029-0608	3/17/2010	JA42072-12A	6.5-7 ft	**1730**	J	12900	J
153-SB-029	153-SB-029-0810	3/17/2010	JA42072-13A	9-9.5 ft	**7860**		20100	J
153-SB-029	153-SB-029-1012	3/17/2010	JA42072-14A	10.5-11 ft	1	J	1060	J
153-SB-029	153-SB-029-1214	3/17/2010	JA42072-15A	12.5-13 ft	1.6	UJ	41.8	J
153-SB-030	153-SB-030-0002	3/25/2010	JA42736-1A	1.5-2 ft	1.5		18.5	J
153-SB-030	153-SB-030-0204	3/25/2010	JA42736-2A	3-3.5 ft	0.9		15.6	J
153-SB-030	153-SB-030-0406	3/25/2010	JA42736-3A	5.5-6 ft	0.47	U	12.1	J
153-SB-030	153-SB-030-0608	3/25/2010	JA42736-4A	7.5-8 ft	0.75		92.5	J
153-SB-030	153-SB-030-0810	3/25/2010	JA42736-5A	9-9.5 ft	0.51	U	16.5	J
153-SB-030	153-SB-030-1012	3/25/2010	JA42736-6A	10.5-11 ft	1.9		106	J
153-SB-030	153-SB-030-1214	3/25/2010	JA42736-7A	12.5-13 ft	0.76	U	150	J
153-SB-030	153-SB-030-1416	3/25/2010	JA42736-8A	15-15.5 ft	1.2		9.8	J
153-SB-031	153-SB-031-0002DP	3/25/2010	JA42736-10A	1.5-2 ft DP	7.9		105	J
153-SB-031	153-SB-031-0002	3/25/2010	JA42736-9A	1.5-2 ft	7.5		11.8	J
153-SB-031	153-SB-031-0204	3/25/2010	JA42736-11A	3.5-4 ft	5		68.5	J
153-SB-031	153-SB-031-0406	3/25/2010	JA42736-12A	5-5.5 ft	0.81		30.9	J
153-SB-031	153-SB-031-0608	3/25/2010	JA42736-13A	6-6.2 ft	0.48	U	14.3	J
153-SB-031	153-SB-031-0810	3/25/2010	JA42736-14A	9-9.5 ft	0.49	U	16.5	J
153-SB-031	153-SB-031-1012	3/25/2010	JA42736-15A	11.5-12 ft	0.75	U	229	J
153-SB-031	153-SB-031-1214	3/25/2010	JA42736-16A	12.5-13 ft	0.87	U	85.1	J
153-SB-031	153-SB-031-1416	3/25/2010	JA42736-17A	15-15.5 ft	0.5		13.5	J
153-SB-031	153-SB-031-1416DP	3/25/2010	JA42736-18A	15-15.5 ft DP	1.5		26	J

Prepared by: TG
Checked by: EB

TABLE 3
SOIL SAMPLE RESULTS - TOTAL AND HEXAVALENT CHROMIUM
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Location ID	Field Sample ID	Date Sampled	Lab Sample ID	Depth	Hexavalent Chromium (mg/kg)		Total Chromium (mg/kg)	
153-SB-032	153-SB-032-0002	3/25/2010	JA42736-19A	1.5-2 ft	0.91		57.8	J
153-SB-032	153-SB-032-0204	3/25/2010	JA42736-20A	3-3.5 ft	3.2		34.8	J
153-SB-032	153-SB-032-0406	3/25/2010	JA42736-21A	4.5-5 ft	3.1		19.1	
153-SB-032	153-SB-032-0608	3/25/2010	JA42736-22A	6-6.5 ft	1.4	U	9.2	
153-SB-032	153-SB-032-0810	3/25/2010	JA42736-23A	8.5-9 ft	1.2	U	8.7	
153-SB-032	153-SB-032-1012	3/25/2010	JA42736-24A	11.5-12 ft	1.5	U	190	
153-SB-032	153-SB-032-1214	3/25/2010	JA42736-25A	13-13.5 ft	0.98	U	16.2	
153-SB-032	153-SB-032-1416	3/25/2010	JA42736-26A	15-15.5 ft	0.93	U	13.5	
153-SB-033	153-SB-033-0002	4/30/2010	JA45464-1A	0.5-1 ft	1.7	J	16.2	
153-SB-033	153-SB-033-0204	4/30/2010	JA45464-2A	3-3.5 ft	2.2	J	53	
153-SB-033	153-SB-033-0406	4/30/2010	JA45464-3A	5.5-6 ft	2.1	J	18.6	
153-SB-033	153-SB-033-0608	4/30/2010	JA45464-4A	6.5-7 ft	1.2	J	9.6	
153-SB-033	153-SB-033-0810	4/30/2010	JA45464-5A	9.5-10 ft	**97.2**	J	5880	
153-SB-033	153-SB-033-1012	4/30/2010	JA45464-6A	10.5-11 ft	1.4	UJ	773	
153-SB-033	153-SB-033-1012DP	4/30/2010	JA45464-7A	10.5-11 ft DP	**74.7**	J	5030	
153-SB-033	153-SB-033-1214	4/30/2010	JA45464-8A	12.5-13 ft	2	J	5330	
153-SB-033	153-SB-033-1416	4/30/2010	JA45464-9A	14.5-15 ft	0.95	UJ	6.7	
153-SB-042	153-SB-042-0203	3/22/2010	JA42465-1A	2-2.5 ft	12.6		445	J
153-SB-043	153-SB-043-0203	3/22/2010	JA42465-2A	2-2.5 ft	**54.5**		1170	J
153-SB-044	153-SB-044-0203	3/22/2010	JA42465-3A	2-2.5 ft	13.2		617	J
153-SB-045	153-SB-045-0203	3/22/2010	JA42465-4A	2-2.5 ft	**84.6**		2160	J
153-SB-045	153-SB-045DP-0203	3/22/2010	JA42465-5A	2-2.5 ft DP	**88.5**		2070	J
153-SB-046	153-SB-046-0304	3/22/2010	JA42465-6A	3-3.5 ft	**47.2**		2110	J
153-SB-047	153-SB-047-0304	3/22/2010	JA42465-7A	3-3.5 ft	0.98		23.4	J
153-SB-048	153-SB-048-0304	3/22/2010	JA42465-8A	3-3.5 ft	1.3		26.6	J
153-SB-049	153-SB-049-0304	3/22/2010	JA42465-9A	3-3.5 ft	1.2		23.4	J
153-SB-050	153-SB-050-0304	3/22/2010	JA42465-10A	3-3.5 ft	0.61		26.4	J
153-SB-051	153-SB-051-0002	3/31/2010	JA43120-1	1-1.5 ft	2.2	J	125	J
153-SB-051	153-SB-051-0204	3/31/2010	JA43120-2	2-2.5 ft	**92.6**	J	1860	J
153-SB-052	153-SB-052-0002	6/16/2010	JA49207-1A	1-1.5 ft	**25.4**			
153-SB-053	153-SB-053-0002	6/16/2010	JA49207-2RT	0-0.5 ft	0.89			
153-SB-053	153-SB-053-0204	6/16/2010	JA49207-3A	3-3.5 ft	19.2			
153-SB-054	153-SB-054-0002	6/16/2010	JA49207-4RT	1-1.5 ft	1.4			
153-SB-054	153-SB-054-0204	6/16/2010	JA49207-5A	3-3.5 ft	**55.5**			
153-SB-055	153-SB-055-0204	7/26/2010	JA52306-2AR	2.5-3 ft	0.8			
153-SB-057	153-SB-057-0002	12/21/2010	JA64809-1A	1-1.5 ft	1.6		29	
153-SB-057	153-SB-057-0204	12/21/2010	JA64809-2A	2.5-3 ft	**85**		1550	
153-SB-057	153-SB-057-0406	12/21/2010	JA64809-3A	4.5-5 ft	**141**	J	2050	
153-SB-057	153-SB-057-0608	12/21/2010	JA64809-4A	6-6.5 ft	**1520**	J	7670	
153-SB-058	153-SB-058-0002	12/15/2010	JA64253-1A	1-1.5 ft	**22.7**	J	501	J
153-SB-058	153-SB-058-0204	12/15/2010	JA64253-2A	2.5-3 ft	13.7		109	J
153-SB-058	153-SB-058-0406	12/15/2010	JA64253-3A	4.5-5 ft	**601**		6950	J
153-SB-058	153-SB-058-0608	12/15/2010	JA64253-4A	6.5-7 ft	0.54	U	33	J
153-SB-058	153-SB-058-0810	12/15/2010	JA64253-5A	9-9.5 ft	0.93		10.4	J
153-SB-058	153-SB-058-1012	12/15/2010	JA64253-6A	10.5-11 ft	1.2		16.9	J

Prepared by: TG
Checked by: EB

TABLE 3
SOIL SAMPLE RESULTS - TOTAL AND HEXAVALENT CHROMIUM
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Location ID	Field Sample ID	Date Sampled	Lab Sample ID	Depth	Hexavalent Chromium (mg/kg)		Total Chromium (mg/kg)	
153-SB-059	153-SB-059-0002	12/15/2010	JA64253-7A	1-1.5 ft	14.7		172	J
153-SB-059	153-SB-059-0204	12/15/2010	JA64253-8A	3-3.5 ft	2.7		24.1	J
153-SB-059	153-SB-059-0406	12/15/2010	JA64253-9A	4.5-5 ft	6.6	J	59.7	J
153-SB-059	153-SB-059-0608	12/15/2010	JA64253-10A	6.5-7 ft	17.1	J	91.1	J
153-SB-059	153-SB-059-0810	12/15/2010	JA64253-11A	8.5-9 ft	1.1	J	10.2	J
153-SB-059	153-SB-059-1012	12/15/2010	JA64253-12A	10.5-11 ft	0.48	J	11	J
153-SB-059	153-SB-059-1214	12/15/2010	JA64253-13A	12.5-13 ft	0.78		23.4	J
153-SB-060	153-SB-060-0002	12/14/2010	JA64094-1A	0.5-1 ft	**20.1**	J	304	J
153-SB-060	153-SB-060-0204	12/14/2010	JA64094-2A	3-3.5 ft	**41.4**	J	203	J
153-SB-060	153-SB-060-0406	12/14/2010	JA64094-3A	4-4.5 ft	**40.8**	J	415	J
153-SB-060	153-SB-060-0608	12/14/2010	JA64094-4A	6.5-7 ft	**91**	J	2890	J
153-SB-060	153-SB-060-0810	12/14/2010	JA64094-5A	8-8.5 ft	2	J	9670	J
153-SB-060	153-SB-060-1012	12/14/2010	JA64094-6A	10.5-11 ft	1.3	J	34.8	J
153-SB-060	153-SB-060-1214	12/14/2010	JA64094-7A	12.5-13 ft	1.6	J	168	J
153-SB-061	153-SB-061-0002	12/14/2010	JA64094-8A	1-1.5 ft	1.9	J	13.7	J
153-SB-061	153-SB-061-0204	12/14/2010	JA64094-9A	2.5-3 ft	1.6	J	15.5	J
153-SB-061	153-SB-061-0406	12/14/2010	JA64094-10A	4.5-5 ft	**113**	J	1970	J
153-SB-061	153-SB-061-0608	12/14/2010	JA64094-11A	6.5-7 ft	**30**	J	1270	J
153-SB-061	153-SB-061-0810	12/14/2010	JA64094-12A	8.5-9 ft	2.1	J	442	J
153-SB-061	153-SB-061-1012	12/14/2010	JA64094-13A	10-10.5 ft	0.66	UJ	26	J
153-SB-062	153-SB-062-0002	12/14/2010	JA64094-14A	1-1.5 ft	9.4	J	129	J
153-SB-062	153-SB-062-0204	12/14/2010	JA64094-15A	2.5-3 ft	16.6	J	154	J
153-SB-062	153-SB-062-0406	12/14/2010	JA64094-16A	4.5-5 ft	**26.9**	J	114	J
153-SB-062	153-SB-062-0608	12/14/2010	JA64094-17A	6.5-7 ft	**163**	J	2130	J
153-SB-062	153-SB-062-0810	12/14/2010	JA64094-18A	8-8.5 ft	0.68	UJ	29	J
153-SB-062	153-SB-062-1012	12/14/2010	JA64094-19A	10.5-11 ft	0.74	J	9.8	J
153-SB-063	153-SB-063-0002	12/14/2010	JA64094-20A	1-1.5 ft	**32.2**	J	293	J
153-SB-063	153-SB-063-0204	12/14/2010	JA64094-21A	2.5-3 ft	0.92	UJ	58.5	J
153-SB-063	153-SB-063-0406	12/14/2010	JA64094-22A	4.5-5 ft	0.48	J	14.1	J
153-SB-063	153-SB-063-0608	12/14/2010	JA64094-23A	7-7.5 ft	**37.1**	J	1750	J
153-SB-063	153-SB-063-0810	12/14/2010	JA64094-24A	8.5-9 ft	**109**	J	637	J
153-SB-063	153-SB-063-1012	12/14/2010	JA64094-25A	10.5-11 ft	0.56	U	880	J
153-SB-063	153-SB-063-1012DP	12/14/2010	JA64094-26A	10.5-11 ft DP	0.81	U	9160	J
153-SB-063	153-SB-063-1214	12/14/2010	JA64094-27A	13-13.5 ft	1.1		27.8	J
153-SB-064	153-SB-064-0810	12/15/2010	JA64253-14A	9.5-10 ft	5	U	80.7	J
153-SB-064	153-SB-064-1012	12/15/2010	JA64253-15A	10.5-11 ft	3.8	U	1050	J
153-SB-065	153-SB-065-0204	2/15/2011	JA68196-2A	2.5-3 ft	**20.5**		435	
153-SB-065	153-SB-065-0406	2/15/2011	JA68196-3A	5-5.5 ft	**24**		488	
153-SB-065	153-SB-065-0608	2/15/2011	JA68196-4A	6.5-7 ft	**58**		699	
153-SB-065	153-SB-065-0810	2/15/2011	JA68196-5A	9-9.5 ft	2		579	
153-SB-065	153-SB-065-1012	2/15/2011	JA68196-6	10.5-11 ft	0.87	UJ	8730	
153-SB-066	153-SB-066-0002	2/15/2011	JA68196-7	1.5-2 ft	2	J	17.2	
153-SB-066	153-SB-066-0204	2/15/2011	JA68196-8	2.5-3 ft	0.58	U	18.7	
153-SB-066	153-SB-066-0406	2/15/2011	JA68196-9	5-5.5 ft	0.64	UJ	19.9	
153-SB-066	153-SB-066-0608	2/15/2011	JA68196-10	6.5-7 ft	2.5		19.3	
153-SB-066	153-SB-066-0810	2/15/2011	JA68196-11	9-9.5 ft	0.89	UJ	43.4	
153-SB-066	153-SB-066-1012	2/15/2011	JA68196-12	10.5-11 ft	3.2	J	441	

Prepared by: TG
Checked by: EB

TABLE 3
SOIL SAMPLE RESULTS - TOTAL AND HEXAVALENT CHROMIUM
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Location ID	Field Sample ID	Date Sampled	Lab Sample ID	Depth	Hexavalent Chromium (mg/kg)		Total Chromium (mg/kg)	
153-SB-067	153-SB-067-0002	2/15/2011	JA68196-13A	1-1.5 ft	0.46	U	13.3	
153-SB-067	153-SB-067-0204	2/15/2011	JA68196-14A	2.5-3 ft	3.2		17.5	
153-SB-067	153-SB-067-0406	2/15/2011	JA68196-15A	5-5.5 ft	0.86	U	10.1	
153-SB-067	153-SB-067-0608	2/15/2011	JA68196-16A	6.5-7 ft	0.59		10.1	
153-SB-067	153-SB-067-0810	2/15/2011	JA68196-17A	9-9.5 ft	0.97	U	12.4	
153-SB-067	153-SB-067-1012	2/15/2011	JA68196-18	10.5-11 ft	0.95	UJ	11700	
153-SB-067	153-SB-067-1214	2/15/2011	JA68196-19A	12.5-13 ft	4.1	U	39.8	
153-SB-068	153-SB-068-0002	2/15/2011	JA68196-20	1-1.5 ft	4.1	J	65.6	
153-SB-068	153-SB-068-0204	2/15/2011	JA68196-21	2.5-3 ft	0.59	UJ	16.3	
153-SB-068	153-SB-068-0406	2/15/2011	JA68196-22	5-5.5 ft	0.8	J	20.4	
153-SB-068	153-SB-068-0608	2/15/2011	JA68196-23	6.5-7 ft	0.61	U	19.8	
153-SB-068	153-SB-068-0810	2/15/2011	JA68196-24	9-9.5 ft	0.71	U	21.4	
153-SB-068	153-SB-068-1012	2/15/2011	JA68196-25	10.5-11 ft	10.7	J	24200	
153-SB-068	153-SB-068-1214	2/15/2011	JA68196-26	12.5-13 ft	0.7	UJ	41.5	
153-SB-069	153-SB-069-0001	5/20/2011	JA76376-1A	0.5-1 ft	11.3		115	J
153-SB-069	153-SB-069-0405	5/20/2011	JA76376-2A	4-4.5 ft	0.55	U	3250	J
153-SB-069	153-SB-069-0607	5/20/2011	JA76376-3A	6.5-7 ft	0.87		12.5	J
153-SB-069	153-SB-069-0809A	5/20/2011	JA76376-4A	8-8.5 ft	0.51	U	21.4	J
153-SB-070	153-SB-070-0102	5/20/2011	JA76376-6A	1-1.5 ft	4.8		87.2	J
153-SB-070	153-SB-070-0204	5/20/2011	JA76376-7A	2-2.5 ft	0.75		25.8	J
153-SB-070	153-SB-070-0405	5/20/2011	JA76376-8A	4.5-5 ft	**360**		3230	J
153-SB-070	153-SB-070-0607	5/20/2011	JA76376-9A	6-6.5 ft	**174**		4150	J
153-SB-070	153-SB-070-0910	5/20/2011	JA76376-10A	9-9.5 ft	**46.7**		1240	J
153-SB-071	153-SB-071-0102	5/20/2011	JA76376-13A	1.5-2 ft	6.9		87.3	J
153-SB-071	153-SB-071-0203	5/20/2011	JA76376-14A	2.5-3 ft	0.47	U	12.7	J
153-SB-071	153-SB-071-0405	5/20/2011	JA76376-15A	4.5-5 ft	**59.8**		507	J
153-SB-071	153-SB-071-0405DUP	5/20/2011	JA76376-16A	4.5-5 ft DP	**55.5**		836	J
153-SB-071	153-SB-071-0708	5/20/2011	JA76376-17A	7.5-8 ft	1.5		72.7	J
153-SB-071	153-SB-071-0809	5/20/2011	JA76376-18A	8.5-9 ft	11.4		256	J
153-SB-072	153-SB-072-0405	5/20/2011	JA76376-22	4-4.5 ft	18		NA	
153-SB-072	153-SB-072-0708	5/20/2011	JA76376-23	7-7.5 ft	0.47	U	NA	
153-SB-072	153-SB-072-0910	5/20/2011	JA76376-24	9-9.5 ft	0.52		NA	
153-SB-073	153-SB-073-0405	5/20/2011	JA76376-27	4-4.5 ft	0.51		NA	
153-SB-073	153-SB-073-0607	5/20/2011	JA76376-28	6-6.5 ft	0.48	U	NA	
153-SB-073	153-SB-073-0809	5/20/2011	JA76376-29	8-8.5 ft	0.48	U	NA	
153-SB-074	153-SB-074-0102	5/20/2011	JA76376-38A	1.5-2 ft	9.5		97	J
153-SB-074	153-SB-074-0405	5/20/2011	JA76376-39A	4.5-5 ft	0.49	U	6.1	J
153-SB-074	153-SB-074-0607	5/20/2011	JA76376-40A	6.5-7 ft	0.49	U	4.9	J
153-SB-074	153-SB-074-0809	5/20/2011	JA76376-41A	8.5-9 ft	0.49	U	5.3	J
153-SB-075	153-SB-075-0102	5/20/2011	JA76376-30A	1-1.5 ft	**29.6**		540	J
153-SB-075	153-SB-075-0203	5/20/2011	JA76376-31A	2.5-3 ft	17.5		254	J
153-SB-076	153-SB-076-0102	5/20/2011	JA76376-32A	1.5-2 ft	**55.6**	J	285	J
153-SB-076	153-SB-076-0203	5/20/2011	JA76376-33A	2.5-3 ft	8.5	J	86.4	J
153-SB-077	153-SB-077-0102	5/20/2011	JA76376-34A	1-1.5 ft	5.7	J	46.9	J
153-SB-077	153-SB-077-0203	5/20/2011	JA76376-35A	2.5-3 ft	3.1	J	30.2	J
153-SB-078	153-SB-078-0102	5/20/2011	JA76376-36A	1-1.5 ft	7.9	J	105	J
153-SB-078	153-SB-078-0203	5/20/2011	JA76376-37A	2.5-3 ft	7.7	J	75.9	J

Prepared by: TG
Checked by: EB

TABLE 3
SOIL SAMPLE RESULTS - TOTAL AND HEXAVALENT CHROMIUM
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Location ID	Field Sample ID	Date Sampled	Lab Sample ID	Depth	Hexavalent Chromium (mg/kg)		Total Chromium (mg/kg)	
153-SB-080	153-SB-080-0002	6/22/2011	JA79270-7	1-1.5 ft	12.3		192	J
153-SB-080	153-SB-080-0204	6/22/2011	JA79270-8	2.5-3 ft	7.3		153	J
153-SB-080	153-SB-080-0406	6/22/2011	JA79270-9	4.5-5 ft	3		16	J
153-SB-080	153-SB-080-0608	6/22/2011	JA79270-10	7-7.5 ft	1		8.1	J
153-SB-081	153-SB-081-0002	6/22/2011	JA79270-13A	1.5-2 ft	18.7		636	
153-SB-081	153-SB-081-0204	6/22/2011	JA79270-14A	2-3 ft	**89.7**		4550	
153-SB-081	153-SB-081-0406	6/22/2011	JA79270-15A	4.5-5 ft	65.4		653	
153-SB-081	153-SB-081-0608	6/22/2011	JA79270-16A	6-6.5 ft	0.64	U	10.1	
153-SB-081	153-SB-081-0810	6/22/2011	JA79270-17A	8.5-9 ft	2.4	U	21.9	
153-SB-081	153-SB-081-1012	6/22/2011	JA79270-18A	11.5-12 ft	0.65		17.7	
153-SB-101	153-SB-101-0204	05/02/2014	JB66205-1R	2-2.5 ft	**22**		NA	
153-SB-101	153-SB-101-0406	05/02/2014	JB66205-2R	4-4.5 ft	0.88		NA	
153-SB-101	153-SB-101-0608	05/02/2014	JB66205-3T	6-6.5 ft	2.5		NA	
153-SB-101	153-SB-101-0810	05/02/2014	JB66205-4T	8-8.5 ft	0.52		NA	
153-SB-102	153-SB-102-0204	05/02/2014	JB66205-5R	2-2.5 ft	**109**		NA	
153-SB-102	153-SB-102-0406	05/02/2014	JB66205-6R	4-4.5 ft	**68.5**		NA	
153-SB-102	153-SB-102-0406DP	05/05/2014	JB66205-20R	4-4.5 ft	**69.5**		NA	
153-SB-102	153-SB-102-0608	05/02/2014	JB66205-7R	6-6.5 ft	**160**		NA	
153-SB-102	153-SB-102-0810	05/02/2014	JB66205-8T	8-8.5 ft	0.63	U	NA	
153-SB-103	153-SB-103-0204	05/05/2014	JB66205-9R	2-2.5 ft	1.2		NA	
153-SB-103	153-SB-103-0406	05/05/2014	JB66205-10T	4-4.5 ft	0.89		NA	
153-SB-103	153-SB-103-0608	05/05/2014	JB66205-11T	6-6.5 ft	0.68		NA	
153-SB-103	153-SB-103-0810	05/05/2014	JB66205-12T	8-8.5 ft	0.73	U	NA	
153-SB-104	153-SB-104-0002	05/05/2014	JB66205-13T	1-1.5 ft	0.79		NA	
153-SB-104	153-SB-104-0204	05/05/2014	JB66205-14T	3-3.5 ft	0.67		NA	
153-SB-104	153-SB-104-0406	05/05/2014	JB66205-15T	5-5.5 ft	0.92		NA	
153-SB-104	153-SB-104-0608	05/05/2014	JB66205-16T	7-7.5 ft	0.54		NA	
153-SB-104	153-SB-104-0810	05/05/2014	JB66205-17T	9-9.5 ft	5	U	NA	
153-SB-104	153-SB-104-1012	05/05/2014	JB66205-18T	11-11.5 ft	5.9		NA	
153-SB-104	153-SB-104-1214	05/05/2014	JB66205-19T	12-12.5 ft	7.3	U	NA	
153-SB-105	153-SB-105-0001	06/12/2014	JB69293-1R	0.5-1 ft	16.1		NA	
153-SB-105	153-SB-105-0102	06/12/2014	JB69293-2R	1-1.5 ft	2.9		NA	
153-SB-105	153-SB-105-0203	06/12/2014	JB69293-3R	2-2.5 ft	5.8		NA	
153-SB-105	153-SB-105-0406	06/12/2014	JB69293-4R	4-4.5 ft	14.1		NA	
153-SB-105	153-SB-105-0608	06/12/2014	JB69293-5R	6-6.5 ft	**112**		NA	
153-SB-106	153-SB-106-0001	06/12/2014	JB69293-6R	0.5-1 ft	**322**		NA	
153-SB-106	153-SB-106-0102	06/12/2014	JB69293-7R	1-1.5 ft	**146**		NA	
153-SB-107	153-SB-107-0001	06/12/2014	JB69293-8R	0.5-1 ft	**163**		NA	
153-SB-107	153-SB-107-0102	06/12/2014	JB69293-9R	1-1.5 ft	**169**		NA	
153-SB-107	153-SB-107-0203	06/12/2014	JB69293-10R	2-2.5 ft	**24**		NA	
153-SB-107	153-SB-107-0406	06/12/2014	JB69293-11R	4-4.5 ft	**122**		NA	
153-SB-107	153-SB-107-0608	06/12/2014	JB69293-12R	6-6.5 ft	7.9		NA	
153-SB-108	153-SB-108-0001	06/13/2014	JB69293-13T	0.5-1 ft	**48.9**		NA	
153-SB-108	153-SB-108-0102	06/13/2014	JB69293-14T	1-1.5 ft	**7000**		NA	

Prepared by: TG
Checked by: EB

TABLE 3
SOIL SAMPLE RESULTS - TOTAL AND HEXAVALENT CHROMIUM
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Location ID	Field Sample ID	Date Sampled	Lab Sample ID	Depth	Hexavalent Chromium (mg/kg)		Total Chromium (mg/kg)	
153-SB-109	153-SB-109-0001	06/13/2014	JB69293-15TU	0.5-1 ft	**248**		NA	
153-SB-109	153-SB-109-0102	06/13/2014	JB69293-16TU	1-1.5 ft	**576**		NA	
153-SB-109	153-SB-109-0203	06/13/2014	JB69293-17T	2-2.5 ft	12.3		NA	
153-SB-109	153-SB-109-0406	06/13/2014	JB69293-18T	4-4.5 ft	**464**		NA	
153-SB-110	153-SB-110-0001	06/13/2014	JB69293-19TU	0.5-1 ft	6.9		NA	
153-SB-110	153-SB-110-0102	06/13/2014	JB69293-20TU	1-1.5 ft	6.6		NA	
153-SB-110	153-SB-110-0203	06/13/2014	JB69293-21TU	2-2.5 ft	1.7		NA	
153-SB-110	153-SB-110-0406	06/13/2014	JB69293-22T	4-4.5 ft	3		NA	
153-SB-110	153-SB-110-0608	06/13/2014	JB69293-23TU	6-6.5 ft	3.1		NA	
153-SB-111	153-SB-111-0001	06/13/2014	JB69293-24T	0.5-1 ft	**20.8**		NA	
153-SB-111	153-SB-111-0102	06/13/2014	JB69293-25TU	1-1.5 ft	**125**		NA	
153-SB-111	153-SB-111-0203	06/13/2014	JB69293-26T	2-2.5 ft	**106**		NA	
153-SB-111	153-SB-111-0406	06/13/2014	JB69293-27T	4-4.5 ft	**227**		NA	
153-SB-111	153-SB-111-0608	06/13/2014	JB69293-28TU	6-6.5 ft	**126**		NA	
153-SB-112	153-SB-112-0002	07/24/2014	JB72591-1AR	1-1.5 ft	6.8		89.8	
153-SB-112	153-SB-112-0204	07/24/2014	JB72591-2AR	2-2.5 ft	**27.6**		349	
153-SB-112	153-SB-112-0204DP	07/24/2014	JB72591-7A	2-2.5 ft	17.6		268	
153-SB-112	153-SB-112-0406	07/24/2014	JB72591-3A	4-4.5 ft	**137**		2880	
153-SB-112	153-SB-112-0608	07/24/2014	JB72591-4AR	7.5-8 ft	**250**	J	1140	
153-SB-112	153-SB-112-0810	07/24/2014	JB72591-5AR	8-8.5 ft	**24.4**		1420	
153-SB-112	153-SB-112-1012	07/24/2014	JB72591-6AR	10.5-11 ft	**55.6**		496	
153-SB-113	153-SB-113-0002	07/24/2014	JB72591-8AR	1.5-2 ft	2.9		24.4	
153-SB-113	153-SB-113-0204	07/24/2014	JB72591-9AR	2.5-3 ft	0.56	J	6.5	
153-SB-113	153-SB-113-0406	07/24/2014	JB72591-10AR	4.5-5 ft	1	J	14	
153-SB-113	153-SB-113-0406DP	07/24/2014	JB72591-14AR	4.5-5 ft	1	J	23.7	
153-SB-113	153-SB-113-0608	07/24/2014	JB72591-11AR	6.5-7 ft	**68.3**		201	
153-SB-113	153-SB-113-0810	07/24/2014	JB72591-12AR	8.5-9 ft	7.4		503	
153-SB-113	153-SB-113-1012	07/24/2014	JB72591-13AR	10-10.5 ft	7.7		26.3	
153-SB-114	153-SB-114-0608	07/24/2014	JB72591-24TU	6.5-7 ft	11.5		38.3	
153-SB-115	153-SB-115-0204	07/24/2014	JB72591-16TU	2.5-3 ft	2.7		22.8	
153-SB-115	153-SB-115-0406	07/24/2014	JB72591-17TU	4-4.5 ft	7.8		69.4	
153-SB-115	153-SB-115-0608	07/24/2014	JB72591-18TU	6.5-7 ft	8.1		17.4	
153-SB-115	153-SB-115-0810	07/24/2014	JB72591-19TU	8.5-9 ft	3.4	U	36.4	
153-SB-A01	153-SB-A01-0002	5/21/1997	1359|U8893	0-2 ft	5.4	J	59.3	J
153-SB-A01	153-SB-A01-0406	5/21/1997	1360|U8893	4-6 ft	**7490**	J	31300	J
153-SB-A01	153-SB-A01-0608	5/21/1997	1360|U8893	6-8 ft	**7690**	J	17400	J
153-SB-A01	153-SB-A01-0810	5/21/1997	1360|U8893	8-10 ft	3.7	UJ	183	J
153-SB-A01	153-SB-A01-1214	5/21/1997	1360|U8893	12-14 ft	**60.7**	J	3030	J
153-SB-A01	153-SB-A01-1416	5/21/1997	1360|U8893	14-16 ft	**20.8**	J	59.2	J
153-SB-A01R	153-SB-A01R-1214	9/27/2010	JA57350-1	12.5-13 ft	1.6		NA	
153-SB-A01R	153-SB-A01R-1416	9/27/2010	JA57350-2	14.5-15 ft	3		NA	
153-SB-A02	153-SB-A02-0002	5/21/1997	1360|U8893	0-2 ft	**281**	J	5530	J
153-SB-A02	153-SB-A02-0204	5/21/1997	1360|U8893	2-4 ft	**998**	J	10300	J
153-SB-A02	153-SB-A02-0406	5/21/1997	1360|U8893	4-6 ft	**361**	J	3120	J
153-SB-A02	153-SB-A02-0810	5/21/1997	1360|U8893	8-10 ft	6.4	UJ	28400	J
153-SB-A02	153-SB-A02-1214	5/21/1997	1360|U8893	12-14 ft	2.5	UJ	9.8	J

Prepared by: TG
Checked by: EB

TABLE 3
SOIL SAMPLE RESULTS - TOTAL AND HEXAVALENT CHROMIUM
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Location ID	Field Sample ID	Date Sampled	Lab Sample ID	Depth	Hexavalent Chromium (mg/kg)		Total Chromium (mg/kg)	
153-SB-A03	153-SB-A03-0002	5/21/1997	1360|U8893	0-2 ft	**66.1**	J	1850	J
153-SB-A03	153-SB-A03-0204	5/21/1997	1360|U8893	2-4 ft	12.6	J	99.4	J
153-SB-A03	153-SB-A03-0406	5/21/1997	1360|U8893	4-6 ft	**1160**	J	9870	J
153-SB-A03	153-SB-A03-0608	5/21/1997	1360|U8893	6-8 ft	**49.7**	J	357	J
153-SB-A03	153-SB-A03-0810	5/21/1997	1360|U8893	8-10 ft	**227**	J	1200	J
153-SB-A03	153-SB-A03-1214	5/21/1997	1360|U8893	12-14 ft	8.3	J	27	J
153-SB-A04	153-SB-A04-0002	5/21/1997	1360|U8893	0-2 ft	8	J	84.8	J
153-SB-A04	153-SB-A04-0406	5/21/1997	1360|U8893	4-6 ft	**7680**	J	25400	J
153-SB-A04	153-SB-A04-0608	5/21/1997	1360|U8893	6-8 ft	**33.2**	J	134	J
153-SB-A04	153-SB-A04-0810	5/21/1997	1360|U8893	8-10 ft	**93**	J	705	J
153-SB-A04	153-SB-A04-1012	5/21/1997	1361|U8894	10-12 ft	**222**	J	1130	J
153-SB-A04	153-SB-A04-1012-D	5/21/1997	1361|U8894	10-12 ft DP	**229**	J	1810	J
153-SB-A04	153-SB-A04-1214	5/21/1997	1361|U8894	12-14 ft	3.5	J	17.3	J
153-SB-A05	153-SB-A05-0002	5/21/1997	1361|U8894	0-2 ft	**624**	J	11200	J
153-SB-A05	153-SB-A05-0204	5/21/1997	1361|U8894	2-4 ft	**4520**	J	24900	J
153-SB-A05	153-SB-A05-0406	5/21/1997	1361|U8894	4-6 ft	**8250**	J	36000	J
153-SB-A05	153-SB-A05-0608	5/21/1997	1361|U8894	6-8 ft	**9150**	J	39800	J
153-SB-A05	153-SB-A05-0810	5/21/1997	1361|U8894	8-10 ft	**7020**	J	31200	J
153-SB-A05	153-SB-A05-1214	5/21/1997	1361|U8894	12-14 ft	**2570**	J	29900	J
153-SB-A05	153-SB-A05-1416	5/21/1997	1361|U8894	14-16 ft	**187**	J	1270	J
153-SB-A06	153-SB-A06-0002	5/22/1997	1362|U8894	0-2 ft	**194**	J	3340	J
153-SB-A06	153-SB-A06-0406	5/22/1997	1362|U8894	4-6 ft	**159**	J	3080	J
153-SB-A06	153-SB-A06-0608	5/22/1997	1362|U8894	6-8 ft	**4110**	J	22500	J
153-SB-A06	153-SB-A06-0810	5/22/1997	1362|U8894	8-10 ft	**3230**	J	11500	J
153-SB-A06	153-SB-A06-0810-D	5/22/1997	1362|U9171	8-10 ft DP	**3600**	J	9540	
153-SB-A06	153-SB-A06-1012	5/22/1997	1362|U8894	10-12 ft	**1070**	J	16900	J
153-SB-A06	153-SB-A06-1214	5/22/1997	1362|U8894	12-14 ft	**1970**	J	36000	J
153-SB-A06	153-SB-A06-1416	5/22/1997	1362|U8894	14-16 ft	11.4	J	32.6	J
153-SB-A06	153-SB-A06-1618	5/22/1997	1362|U8894	16-18 ft	2.6	J	37.7	J
153-SB-A06	153-SB-A06-1820	5/22/1997	1362|U8894	18-20 ft	**96.3**	J	1250	J
153-SB-A06	153-SB-A06-2022	5/22/1997	1362|U8894	20-22 ft	**70.4**	J	529	J
153-SB-A06	153-SB-A06-2224	5/22/1997	1362|U8894	22-24 ft	**63.9**	J	365	J
153-SB-A07	153-SB-A07-0002	5/22/1997	1362|U9171	0-2 ft	**179**	J	3090	
153-SB-A07	153-SB-A07-0204	5/22/1997	1362|U9171	2-4 ft	12.6	J	121	
153-SB-A07	153-SB-A07-0406	5/22/1997	1362|U9171	4-6 ft	**1520**	J	19500	
153-SB-A07	153-SB-A07-0608	5/22/1997	1362|U9171	6-8 ft	**7750**	J	27700	J
153-SB-A07	153-SB-A07-0810	5/22/1997	1363|U9171	8-10 ft	**184**		1050	
153-SB-A07	153-SB-A07-1214	5/22/1997	1362|U9171	12-14 ft	7.7	UJ	48300	
153-SB-A07	153-SB-A07-1618	5/22/1997	1362|U9171	16-18 ft	**30.4**	J	131	
153-SB-A07	153-SB-A07-1820	5/22/1997	1362|U9171	18-20 ft	**34.1**	J	156	

Prepared by: TG
Checked by: EB

TABLE 3
SOIL SAMPLE RESULTS - TOTAL AND HEXAVALENT CHROMIUM
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Location ID	Field Sample ID	Date Sampled	Lab Sample ID	Depth	Hexavalent Chromium (mg/kg)		Total Chromium (mg/kg)	
153-SB-A08	153-SB-A08-0002	5/22/1997	1363|U9171	0-2 ft	**13100**		19500	
153-SB-A08	153-SB-A08-0204	5/22/1997	1363|U9171	2-4 ft	**4750**		18100	
153-SB-A08	153-SB-A08-0406	5/22/1997	1363|U9171	4-6 ft	**3110**		16000	
153-SB-A08	153-SB-A08-0608	5/22/1997	1363|U9171	6-8 ft	**9070**		23300	
153-SB-A08	153-SB-A08-0608-D	5/22/1997	1363|U9171	6-8 ft DP	**8970**		25000	
153-SB-A08	153-SB-A08-0810	5/22/1997	1363|U9171	8-10 ft	**5380**		14000	J
153-SB-A08	153-SB-A08-1214	5/22/1997	1363|U9171	12-14 ft	14		35.4	
153-SB-A08	153-SB-A08-1416	5/22/1997	1363|U9171	14-16 ft	10.8		28.4	
153-SB-A08	153-SB-A08-1618	5/22/1997	1363|U9171	16-18 ft	5.2		20.1	
153-SB-A08	153-SB-A08-1820	5/22/1997	1363|U9171	18-20 ft	3.9		10.5	
153-SB-A09	153-SB-A09-0002	5/22/1997	1363|U9171	0-2 ft	**39.7**		973	
153-SB-A09	153-SB-A09-0406	5/22/1997	1363|U9171	4-6 ft	**155**		1730	
153-SB-A09	153-SB-A09-0608	5/22/1997	1363|U9171	6-8 ft	**110**		683	
153-SB-A09	153-SB-A09-0810	5/22/1997	1363|U9171	8-10 ft	5.8	UJ	41300	J
153-SB-A09	153-SB-A09-1214	5/22/1997	1363|U9172	12-14 ft	2.3	UJ	8	J
153-SB-A09	153-SB-A09-1618	5/22/1997	1364|U9172	16-18 ft	2.6	UJ	11	
153-SB-A09	153-SB-A09-1820	5/22/1997	1363|U9172	18-20 ft	2.5	UJ	2.9	
153-SB-A10	153-SB-A10-0002	5/22/1997	1363|U9172	0-2 ft	**59.8**	J	902	
153-SB-A10	153-SB-A10-0204	5/22/1997	1363|U9172	2-4 ft	**599**	J	10300	
153-SB-A10	153-SB-A10-0406	5/22/1997	1363|U9172	4-6 ft	**2450**	J	8180	
153-SB-A10	153-SB-A10-0810	5/22/1997	1363|U9172	8-10 ft	**3680**	J	15300	
153-SB-A10	153-SB-A10-1012	5/22/1997	1364|U9172	10-12 ft	8	J	26.2	
153-SB-A10	153-SB-A10-1214	5/22/1997	1364|U9172	12-14 ft	2.3	UJ	11	J
153-SB-A10	153-SB-A10-1416	5/22/1997	1364|U9172	14-16 ft	2.3	UJ	8	
153-SB-A11	153-SB-A11-0002	5/22/1997	1364|U9172	0-2 ft	**58.5**	J	732	
153-SB-A11	153-SB-A11-0204	5/22/1997	1364|U9172	2-4 ft	**10900**	J	35300	
153-SB-A11	153-SB-A11-0406	5/22/1997	1364|U9172	4-6 ft	**67**	J	210	
153-SB-A11	153-SB-A11-0608	5/22/1997	1364|U9172	6-8 ft	**481**	J	5380	
153-SB-A11	153-SB-A11-0810	5/22/1997	1364|U9172	8-10 ft	**675**	J	25700	
153-SB-A11	153-SB-A11-0810-D	5/22/1997	1364|U9172	8-10 ft DP	**560**		14700	
153-SB-A11	153-SB-A11-1214	5/22/1997	1364|U9172	12-14 ft	2.3	UJ	16.5	
153-SB-A12	153-SB-A12-0002	5/22/1997	1364|U9172	0-2 ft	**233**	J	1200	
153-SB-A12	153-SB-A12R-0003	10/13/2009	JA30307-28A	0-3 ft	18.9		NA	
153-SB-A12	153-SB-A12-0406	5/22/1997	1364|U9172	4-6 ft	**52.7**	J	747	
153-SB-A12	153-SB-A12-0608	5/22/1997	1364|U9172	6-8 ft	**1470**	J	29000	J
153-SB-A12	153-SB-A12-0810	5/22/1997	1364|U9172	8-10 ft	6.6	J	1110	
153-SB-A12	153-SB-A12-1214	5/22/1997	1364|U9172	12-14 ft	2.1	UJ	8.6	
153-SB-A12	153-SB-A12-1416	5/22/1997	1364|U9172	14-16 ft	2.5	UJ	5.1	J
153-SB-A13	153-SB-A13-0002	5/22/1997	1364|U9173	0-2 ft	**33.9**	J	433	J
153-SB-A13	153-SB-A13-0204	5/22/1997	1364|U9173	2-4 ft	**54.5**	J	1180	J
153-SB-A13	153-SB-A13-0406	5/22/1997	1364|U9173	4-6 ft	**34.4**	J	198	J
153-SB-A13	153-SB-A13-0810	5/22/1997	1364|U9173	8-10 ft	**232**	J	4440	J
153-SB-A13	153-SB-A13-1416	5/22/1997	1365|U9173	14-16 ft	3.7	J	9.5	J
153-SB-A13	153-SB-A13-1416-D	5/22/1997	1365|U9173	14-16 ft DP	6.6		17.7	

Prepared by: TG
Checked by: EB

TABLE 3
SOIL SAMPLE RESULTS - TOTAL AND HEXAVALENT CHROMIUM
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Location ID	Field Sample ID	Date Sampled	Lab Sample ID	Depth	Hexavalent Chromium (mg/kg)		Total Chromium (mg/kg)	
153-SB-A14	153-SB-A14-0002	5/22/1997	1365|U9173	0-2 ft	18.1	J	154	J
153-SB-A14	153-SB-A14-0810	5/22/1997	1365|U9173	8-10 ft	**116**	J	296	J
153-SB-A14	153-SB-A14-1214	5/22/1997	1365|U9173	12-14 ft	2.3	UJ	8.3	J
153-SB-A14	153-SB-A14-1416	5/22/1997	1365|U9173	14-16 ft	2.5	UJ	10.7	J
153-SB-A15	153-SB-A15-0002	5/22/1997	1365|U9173	0-2 ft	**685**	J	6600	J
153-SB-A15	153-SB-A15R-0002	10/13/2009	JA30307-30A	0-2 ft	**29.5**		1090	
153-SB-A15	153-SB-A15-0204	5/22/1997	1365|U9173	2-4 ft	14.9	J	154	J
153-SB-A15	153-SB-A15-0406	5/22/1997	1365|U9173	4-6 ft	3.6		29.1	J
153-SB-A15	153-SB-A15-0810	5/22/1997	1365|U9173	8-10 ft	**315**		5220	J
153-SB-A15	153-SB-A15-1214	5/22/1997	1365|U9173	12-14 ft	5.4	UJ	5100	J
153-SB-A15	153-SB-A15-1416	5/22/1997	1365|U9173	14-16 ft	2.3	UJ	21.5	J
153-SB-A15A	153-SB-A15A-0002	11/19/1998	98142	0-2 ft	**948**		12100	J
153-SB-A15A	153-SB-A15AR-0002	10/13/2009	JA30307-31A	0-2 ft R	13.7		356	
153-SB-A15B	153-SB-A15B-0002	11/19/1998	98143	0-2 ft	**644**		5140	J
153-SB-A15B	153-SB-A15BR-0002	10/13/2009	JA30307-32A	0-2 ft R	3.2		68.6	
153-SB-A15C	153-SB-A15C-0002	11/19/1998	98144	0-2 ft	**31.8**		435	J
153-SB-A16	153-SB-A16-0002	5/22/1997	1365|U9173	0-2 ft	5.7		56.2	J
153-SB-A16	153-SB-A16-0406	5/22/1997	1365|U9173	4-6 ft	2.3	UJ	14.3	J
153-SB-A16	153-SB-A16-0406-D	5/22/1997	1366|U9174	4-6 ft DP	2.3	UJ	24.6	J
153-SB-A16	153-SB-A16-0810	5/22/1997	1366|U9174	8-10 ft	5	UJ	28200	J
153-SB-A16	153-SB-A16-1214	5/22/1997	1365|U9173	12-14 ft	3.5	UJ	190	J
153-SB-A16	153-SB-A16-1416	5/22/1997	1365|U9173	14-16 ft	2.3	UJ	19.2	J
153-SB-A16	153-SB-A16-1618	5/22/1997	1365|U9174	16-18 ft	2.5	UJ	17.6	J
153-SB-A16	153-SB-A16-1820	5/22/1997	1365|U9174	18-20 ft	2.3	UJ	10.9	J
153-SB-A17	153-SB-A17-0002	5/27/1997	1367|U9174	0-2 ft	**21.1**	J	204	J
153-SB-A17	153-SB-A17-0204	5/27/1997	1367|U9174	2-4 ft	**44.1**	J	767	J
153-SB-A17	153-SB-A17-0406	5/27/1997	1367|U9174	4-6 ft	3.1	J	9	J
153-SB-A17	153-SB-A17-0406-D	5/27/1997	1367|U9174	4-6 ft	2.6	J	6.8	J
153-SB-A17	153-SB-A17-0810	5/27/1997	1367|U9174	8-10 ft	9.4	J	103	J
153-SB-A17	153-SB-A17-1618	5/27/1997	1367|U9174	16-18 ft	2.6	J	17.1	J
153-SB-A18	153-SB-A18-0002	5/27/1997	1367|U9174	0-2 ft	**449**	J	1480	J
153-SB-A18	153-SB-A18R-0002	10/13/2009	JA30307-33A	0-2 ft	5.2		176	
153-SB-A18	153-SB-A18-0406	5/27/1997	1367|U9174	4-6 ft	**42.2**	J	291	J
153-SB-A18	153-SB-A18-0810	5/27/1997	1367|U9174	8-10 ft	**77.2**	J	464	J
153-SB-A18	153-SB-A18-1214	5/27/1997	1367|U9174	12-14 ft	3.7	J	18.8	J
153-SB-A18A	153-SB-A18A-0002	11/19/1998	98139	0-2 ft	**44.9**		421	J
153-SB-A18B	153-SB-A18B-0002	11/19/1998	98140	0-2 ft	**446**		6620	J
153-SB-A18B	153-SB-A18BR-0002	10/13/2009	JA30307-34A	0-2 ft R	1.7	U	38.8	
153-SB-A18C	153-SB-A18C-0002	11/19/1998	98141	0-2 ft	**458**		2550	J
153-SB-A18C	153-SB-A18CR-0002	10/13/2009	JA30307-35A	0-2 ft R	**170**		2530	
153-SB-A19	153-SB-A19-0002	5/27/1997	1367|U9174	0-2 ft	2.3	UJ	12.1	J
153-SB-A19	153-SB-A19-0204	5/27/1997	1367|U9174	2-4 ft	**21.6**	J	208	J
153-SB-A19	153-SB-A19-0406	5/27/1997	1367|U9174	4-6 ft	4.8	J	41.5	J
153-SB-A19	153-SB-A19-0810	5/27/1997	1367|U9174	8-10 ft	8.6	J	181	J
153-SB-A19	153-SB-A19-1214	5/27/1997	1367|U9174	12-14 ft	3.1	J	15.2	J
153-SB-A19	153-SB-A19-1214-D	5/27/1997	1368|U9881	12-14 ft DP	2.5	U	28.8	J

Prepared by: TG
Checked by: EB

TABLE 3
SOIL SAMPLE RESULTS - TOTAL AND HEXAVALENT CHROMIUM
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Location ID	Field Sample ID	Date Sampled	Lab Sample ID	Depth	Hexavalent Chromium (mg/kg)		Total Chromium (mg/kg)	
153-SB-A20	153-SB-A20-0002	5/27/1997	1367|U9174	0-2 ft	13.3	J	70.7	J
153-SB-A20	153-SB-A20-0406	5/27/1997	1367|U9174	4-6 ft	2.3	UJ	10.5	J
153-SB-A20	153-SB-A20-0810	5/27/1997	1367|U9174	8-10 ft	14.2	J	67.4	J
153-SB-A20	153-SB-A20-1214	5/27/1997	1367|U9881	12-14 ft	**92.7**	J	265	J
153-SB-A20	153-SB-A20-1618	5/27/1997	1367|U9881	16-18 ft	2.4	UJ	5.9	J
153-SB-A20	153-SB-A20-1820	5/27/1997	1368|U9881	18-20 ft	2.4	U	9.8	J

Notes:

Bold and shaded results exceed NJDEP criteria for Hexavalent Chromium (20 mg/kg)

U: Compound was not detected. The Practical Quantitation Limt for Hexavalent Chromium is 2 mg/kg.

J: Data indicates the presence of a compound that meets the identification criteria. The concentration given is an approximate value.

UJ: The compound was not detected at the indicated concentration. The result is less than the specified quantitation limit but greater than or equal to the method detection limit.

R: The sample interval was reanalyzed at a later date

DP: Duplicate Sample

NA: Not Analyzed

NS: No Standard

Prepared by: TG
Checked by: EB

TABLE 4
SOIL SAMPLE RESULTS - VOCs, SVOCs, TAL METALS
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Field Sample ID			153-SB-070-0102	153-SB-071-0405	153-SB-074-0102	153-SB-A03-0810	153-SB-A04-1214	153-SB-A07-0608
Location			153-SB-070	153-SB-071	153-SB-074	153-SB-A03	153-SB-A04	153-SB-A07
Sample Depth			1-1.5 ft	4.5-5 ft	1.5-2 ft	08-10 ft	12-14 ft	06-08 ft
Sample Date	RDC	NRDC	5/20/2011	5/20/2011	5/20/2011	5/21/1997	5/21/1997	5/22/1997
VOCs (mg/kg)								
1,1,1-TRICHLOROETHANE	290	4200	NA	NA	NA	2.5 U	1.4 U	1.8 U
1,1,2,2-TETRACHLOROETHANE	1	3	NA	NA	NA	**2.5** U	**1.4** U	**1.8** U
1,1,2-TRICHLOROETHANE	2	6	NA	NA	NA	**2.5** U	1.4 U	1.8 U
1,1-DICHLOROETHANE	8	24	NA	NA	NA	2.5 U	1.4 U	1.8 U
1,1-DICHLOROETHENE	11	150	NA	NA	NA	2.5 U	1.4 U	1.8 U
1,2-DICHLOROETHANE	0.9	3	NA	NA	NA	**2.5** U	**1.4** U	**1.8** U
1,2-DICHLOROETHENE (TOTAL)	NS	NS	NA	NA	NA	2.5 U	1.4 U	1.8 U
1,2-DICHLOROPROPANE	2	5	NA	NA	NA	**2.5** U	1.4 U	1.8 U
2-BUTANONE	3100	44000	NA	NA	NA	2.5 U	1.4 U	1.8 U
2-HEXANONE	NS	NS	NA	NA	NA	2.5 U	1.4 U	1.8 U
4-METHYL-2-PENTANONE	NS	NS	NA	NA	NA	2.5 U	1.4 U	1.8 U
ACETONE	70000	NS	NA	NA	NA	2.5 U	1.4 U	1.8 U
BENZENE	2	5	NA	NA	NA	1.3 J	1.4 U	1.8 U
BROMODICHLOROMETHANE	1	3	NA	NA	NA	**2.5** U	**1.4** U	**1.8** U
BROMOFORM	81	280	NA	NA	NA	2.5 U	1.4 U	1.8 U
BROMOMETHANE	25	59	NA	NA	NA	2.5 U	1.4 U	1.8 U
CARBON DISULFIDE	7800	110000	NA	NA	NA	2.5 U	1.4 U	1.8 U
CARBON TETRACHLORIDE	0.6	2	NA	NA	NA	**2.5** U	**1.4** U	**1.8** U
CHLOROBENZENE	510	7400	NA	NA	NA	2.5 U	1.4 U	1.8 U
CHLOROETHANE	220	1100	NA	NA	NA	2.5 U	1.4 U	1.8 U
CHLOROFORM	0.6	2	NA	NA	NA	**2.5** U	**1.4** U	**1.8** U
CHLOROMETHANE	4	12	NA	NA	NA	2.5 U	1.4 U	1.8 U
CIS-1,3-DICHLOROPROPENE	2	7	NA	NA	NA	**2.5** U	1.4 U	1.8 U
ETHYLBENZENE	7800	110000	NA	NA	NA	2.5 U	1.4 U	1.8 U
METHYLENE CHLORIDE	34	97	NA	NA	NA	0.14 J	1.4 U	0.099 J
STYRENE	90	260	NA	NA	NA	2.5 U	1.4 U	1.8 U
TETRACHLOROETHENE	2	5	NA	NA	NA	**2.5** U	1.4 U	1.8 U
TOLUENE	6300	91000	NA	NA	NA	2.5 U	1.4 U	1.8 U
TRANS-1,3-DICHLOROPROPENE	2	7	NA	NA	NA	**2.5** U	1.4 U	1.8 U
TRICHLOROETHENE	7	20	NA	NA	NA	2.5 U	1.4 U	1.8 U
VINYL CHLORIDE	0.7	2	NA	NA	NA	**2.5** U	**1.4** U	**1.8** U
XYLENES, TOTAL	12000	170000	NA	NA	NA	2.5 U	1.4 U	1.8 U

Prepared by: TG
Checked by: EB

TABLE 4
SOIL SAMPLE RESULTS - VOCs, SVOCs, TAL METALS
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Field Sample ID			153-SB-070-0102	153-SB-071-0405	153-SB-074-0102	153-SB-A03-0810	153-SB-A04-1214	153-SB-A07-0608
Location			153-SB-070	153-SB-071	153-SB-074	153-SB-A03	153-SB-A04	153-SB-A07
Sample Depth			1-1.5 ft	4.5-5 ft	1.5-2 ft	08-10 ft	12-14 ft	06-08 ft
Sample Date	RDC	NRDC	5/20/2011	5/20/2011	5/20/2011	5/21/1997	5/21/1997	5/22/1997
SVOCs (mg/kg)								
1,1'-BIPHENYL	3100	34000	0.067 U	0.066 U	0.178			
1,2,4-TRICHLOROBENZENE	73	820	NA	NA	NA	0.62 U	0.41 R	0.97 U
1,2-DICHLOROBENZENE	5300	59000	NA	NA	NA	0.62 U	0.41 R	0.97 U
1,3-DICHLOROBENZENE	5300	59000	NA	NA	NA	0.62 U	0.41 R	0.97 U
1,4-DICHLOROBENZENE	5	13	NA	NA	NA	0.62 U	0.41 R	0.97 U
2,2'-OXYBIS(1-CHLOROPROPANE)	23	67	0.067 U	0.066 U	0.07 U	0.62 U	0.41 R	0.97 U
2,4,5-TRICHLOROPHENOL	6100	68000	0.17 U	0.17 U	0.18 U	1.5 U	0.99 R	2.3 U
2,4,6-TRICHLOROPHENOL	19	74	0.17 U	0.17 U	0.18 U	0.62 U	0.41 R	0.97 U
2,4-DICHLOROPHENOL	180	2100	0.17 U	0.17 U	0.18 U	0.62 U	0.41 R	0.97 U
2,4-DIMETHYLPHENOL	1200	14000	0.0637 J	0.17 U	0.18 U	0.032 J	0.41 R	0.97 U
2,4-DINITROPHENOL	120	1400	0.67 U	0.66 U	0.7 U	1.5 U	0.99 R	2.3 U
2,4-DINITROTOLUENE	0.7	3	0.067 U	0.066 U	0.07 U	0.62 U	0.41 R	**0.97** U
2,6-DINITROTOLUENE	0.7	3	0.067 U	0.066 U	0.07 U	0.62 U	0.41 R	**0.97** U
2-CHLORONAPHTHALENE	NS	NS	0.067 U	0.066 U	0.07 U	0.62 U	0.41 R	0.97 U
2-CHLOROPHENOL	310	2200	0.17 U	0.17 U	0.18 U	0.62 U	0.41 R	0.97 U
2-METHYLNAPHTHALENE	230	2400	0.0377 J	0.066 UJ	0.423	0.44 J	0.41 R	0.97 U
2-METHYLPHENOL	310	3400	0.067 U	0.066 U	0.07 U	0.039 J	0.41 R	0.97 U
2-NITROANILINE	39	23000	0.17 U	0.17 U	0.18 U	1.5 U	0.99 R	2.3 U
2-NITROPHENOL	NS	NS	0.17 U	0.17 U	0.18 U	0.62 U	0.41 R	0.97 U
3,3'-DICHLOROBENZIDINE	1	4	0.17 U	0.17 U	0.18 U	0.62 U	0.41 R	0.97 U
3-NITROANILINE	NS	NS	0.17 U	0.17 U	0.18 U	1.5 U	0.99 R	2.3 U
4,6-DINITRO-2-METHYLPHENOL	6	68	0.67 U	0.66 U	0.7 U	1.5 U	0.99 R	2.3 U
4-BROMOPHENYL PHENYL ETHER	NS	NS	0.067 U	0.066 U	0.07 U	0.62 U	0.41 R	0.97 U
4-CHLORO-3-METHYLPHENOL	NS	NS	0.17 U	0.17 U	0.18 U	0.62 U	0.41 R	0.97 U
4-CHLOROANILINE	9	66	0.17 U	0.17 U	0.18 U	0.62 U	0.41 R	0.97 U
4-CHLOROPHENYL PHENYL ETHER	NS	NS	0.067 U	0.066 U	0.07 U	0.62 U	0.41 R	0.97 U
4-METHYLPHENOL	31	340	NA	NA	NA	0.088 J	0.41 R	0.97 U
4-NITROANILINE	NS	NS	0.17 U	0.17 U	0.18 U	1.5 U	0.99 R	2.3 U
4-NITROPHENOL	NS	NS	0.34 U	0.33 U	0.35 U	1.5 U	0.99 R	2.3 U
ACENAPHTHENE	3400	37000	0.273	0.033 U	2.13	0.045 J	0.41 R	0.97 U
ACENAPHTHYLENE	NS	300000	1.16	0.033 U	1.47	0.62 U	0.41 R	0.97 U
ACETOPHENONE	2	5	0.17 U	0.17 U	0.18 U	NA	NA	NA
ANTHRACENE	17000	30000	3.16	0.033 U	12	0.024 J	0.41 R	0.97 U
ATRAZINE	210	2400	0.17 U	0.17 U	0.18 U	NA	NA	NA
BENZALDEHYDE	6100	68000	0.17 U	0.17 U	0.18 U	NA	NA	NA
BENZO(A)ANTHRACENE	0.6	2	**9.41**	0.0246 J	**38.1**	0.063 J	0.009 R	**0.97** U
BENZO(A)PYRENE	0.2	0.2	**5.87**	0.0216 J	**35.7**	0.042 J	0.006 R	**0.97** U
BENZO(B)FLUORANTHENE	0.6	2	**6.28**	0.0219 J	**34.6**	0.046 J	0.008 R	**0.97** U
BENZO(G,H,I)PERYLENE	380000	30000	1.96	0.0169 J	21.1	0.022 J	0.41 R	0.97 U
BENZO(K)FLUORANTHENE	6	23	3.29	0.033 U	**20.9**	0.01 J	0.41 R	0.97 U

Prepared by: TG
Checked by: EB

TABLE 4
SOIL SAMPLE RESULTS - VOCs, SVOCs, TAL METALS
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Field Sample ID			153-SB-070-0102	153-SB-071-0405	153-SB-074-0102	153-SB-A03-0810	153-SB-A04-1214	153-SB-A07-0608
Location			153-SB-070	153-SB-071	153-SB-074	153-SB-A03	153-SB-A04	153-SB-A07
Sample Depth			1-1.5 ft	4.5-5 ft	1.5-2 ft	08-10 ft	12-14 ft	06-08 ft
Sample Date	RDC	NRDC	5/20/2011	5/20/2011	5/20/2011	5/21/1997	5/21/1997	5/22/1997
BIS(2-CHLOROETHOXY)METHANE	NS	NS	0.067 U	0.066 U	0.07 U	0.62 U	0.41 R	0.97 U
BIS(2-CHLOROETHYL)ETHER	0.4	2	0.067 U	0.066 U	0.07 U	**0.62** U	**0.41** R	**0.97** U
BIS(2-ETHYLHEXYL)PHTHALATE	35	140	0.067 U	0.066 U	0.07 U	0.069 J	0.055 R	0.97 U
BUTYLBENZYL PHTHALATE	1200	14000	0.067 U	0.066 U	0.07 U	0.62 U	0.41 R	0.97 U
CAPROLACTAM	31000	340000	0.067 U	0.066 U	0.07 U	NA	NA	NA
CARBAZOLE	24	96	0.306	0.066 U	2.15	0.029 J	0.41 R	0.97 U
CHRYSENE	62	230	7.96	0.0251 J	34.6	0.07 J	0.007 R	0.97 U
DI-N-BUTYL PHTHALATE	6100	68000	0.067 U	0.066 U	0.07 U	0.62 U	0.41 R	0.97 U
DI-N-OCTYL PHTHALATE	2400	27000	0.067 U	0.066 U	0.07 U	0.62 U	0.41 R	0.97 U
DIBENZO(A,H)ANTHRACENE	0.2	0.2	**1.28**	0.033 U	**8.97**	**0.62** U	**0.41** R	**0.97** U
DIBENZOFURAN	NS	NS	0.122	0.066 U	1.37	0.14 J	0.41 R	0.97 U
DIETHYL PHTHALATE	49000	550000	0.067 U	0.066 U	0.07 U	0.62 U	0.41 R	0.97 U
DIMETHYL PHTHALATE	NS	NS	0.12	0.0792	0.1	0.62 U	0.41 R	0.97 U
FLUORANTHENE	2300	24000	16.5	0.0439	55.2	0.054 J	0.019 R	0.97 U
FLUORENE	2300	24000	0.652	0.033 U	2.88	0.62 U	0.41 R	0.97 U
HEXACHLOROBENZENE	0.3	1	0.067 U	0.066 U	0.07 U	**0.62** U	**0.41** R	**0.97** U
HEXACHLOROBUTADIENE	6	25	0.034 U	0.033 U	0.035 U	0.62 U	0.41 R	0.97 U
HEXACHLOROCYCLOPENTADIENE	45	110	0.67 U	0.66 UJ	0.7 U	0.62 U	0.41 R	0.97 U
HEXACHLOROETHANE	35	140	0.17 U	0.17 U	0.18 U	0.62 U	0.41 R	0.97 U
INDENO(1,2,3-CD)PYRENE	0.6	2	**2.34**	0.0147 J	**20.6**	0.013 J	0.41 R	**0.97** U
ISOPHORONE	510	2000	0.067 U	0.066 U	0.07 U	0.62 U	0.41 R	0.97 U
N-NITROSO-DI-N-PROPYLAMINE	0.2	0.3	0.067 U	0.066 U	0.07 U	**0.62** U	**0.41** R	**0.97** U
N-NITROSODIPHENYLAMINE	99	390	0.17 U	0.17 U	0.18 U	0.62 U	0.41 R	0.97 U
NAPHTHALENE	6	17	0.0292 J	0.033 U	0.553	0.46 J	0.41 R	0.01 J
NITROBENZENE	31	340	0.067 U	0.066 U	0.07 U	0.62 U	0.41 R	0.97 U
PENTACHLOROPHENOL	3	10	0.34 U	0.33 UJ	0.35 U	1.5 U	0.99 R	2.3 U
PHENANTHRENE	NS	300000	5.51	0.0354	30.5	0.31 J	0.005 R	0.97 U
PHENOL	18000	210000	0.067 U	0.066 U	0.07 U	0.62 U	0.41 R	0.97 U
PYRENE	1700	18000	16.2	0.0532	57.7	0.065 J	0.017 R	0.97 U

Prepared by: TG
Checked by: EB

TABLE 4
SOIL SAMPLE RESULTS - VOCs, SVOCs, TAL METALS
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Field Sample ID			153-SB-070-0102	153-SB-071-0405	153-SB-074-0102	153-SB-A03-0810	153-SB-A04-1214	153-SB-A07-0608
Location			153-SB-070	153-SB-071	153-SB-074	153-SB-A03	153-SB-A04	153-SB-A07
Sample Depth			1-1.5 ft	4.5-5 ft	1.5-2 ft	08-10 ft	12-14 ft	06-08 ft
Sample Date	RDC	NRDC	5/20/2011	5/20/2011	5/20/2011	5/21/1997	5/21/1997	5/22/1997
METALs (mg/kg)								
ALUMINUM	78000	NS	9450 J	5270 J	6750 J	6050	3160	34200
ANTIMONY	31	450	2.4 UJ	2.4 UJ	2.5 UJ	0.83 UJ	0.54 UJ	8.2 J
ARSENIC	19	19	5.9	3	8.9	3.5 J	0.69 J	1.8 J
BARIUM	16000	59000	158	24 U	389	225	7.9 J	46.5 J
BERYLLIUM	16	140	0.67	0.24	0.31	0.8 J	0.08 J	0.11 J
CADMIUM	78	78	0.61 U	0.59 U	1	0.11 U	0.07 U	0.29 J
CALCIUM	NS	NS	2890	914	5840	47300	1070 J	199000
CHROMIUM	NS	NS	87.2 J	507 J	97 J	1200 J	17.3 J	27700 J
COBALT	1600	590	6.3	5.9 U	6.2 U	4.8 J	1.3 J	147
COPPER	3100	45000	27.9 J	7.5 J	47.5 J	19.1	2.4 J	56
IRON	NS	NS	20600 J	7040 J	18300 J	6030	1530	73800
LEAD	400	800	80 J	10.9 J	312 J	14.2 J	3.2 J	4.6 J
MAGNESIUM	NS	NS	2530	1010	1680	693 J	590 J	43400
MANGANESE	11000	5900	161 J	70.3 J	227 J	23.9	21.6	1290
MERCURY	23	65	0.12	0.14	1.2	**32.9** J	0.38 J	0.07 UJ
NICKEL	1600	23000	15.7	5.6	17.7	10.2 J	4.5 J	742
POTASSIUM	NS	NS	1200 U	1200 U	1200 U	282 J	253 J	50.6 B
SELENIUM	390	5700	2.4 U	2.4 U	2.5 U	1.2 U	0.79 U	0.94 U
SILVER	390	5700	0.71	0.59 U	0.62 U	0.38 U	0.25 U	0.42 J
SODIUM	NS	NS	1200 U	1200 U	1200 U	271 B	175 B	1170 J
THALLIUM	5	79	1.2 U	1.2 U	1.2 U	1.2 U	1.1 J	0.91 U
VANADIUM	78	1100	26	10	19.9	18.4 J	3.6 J	**443**
ZINC	23000	110000	99.7 J	21.4 J	289 J	13.5	9.2	222
PCBs (mg/kg)								
AROCLOR-1016	NS	NS	NA	NA	NA	0.062 U	0.041 U	0.048 U
AROCLOR-1221	NS	NS	NA	NA	NA	0.13 U	0.083 U	0.098 U
AROCLOR-1232	NS	NS	NA	NA	NA	0.062 U	0.041 U	0.048 U
AROCLOR-1242	NS	NS	NA	NA	NA	0.062 U	0.041 U	0.048 U
AROCLOR-1248	NS	NS	NA	NA	NA	0.062 U	0.041 U	0.048 U
AROCLOR-1254	NS	NS	NA	NA	NA	0.062 U	0.041 U	0.048 U
AROCLOR-1260	NS	NS	NA	NA	NA	0.062 U	0.041 U	0.048 U

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TABLE 4
SOIL SAMPLE RESULTS - VOCs, SVOCs, TAL METALS
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Field Sample ID			153-SB-070-0102	153-SB-071-0405	153-SB-074-0102	153-SB-A03-0810	153-SB-A04-1214	153-SB-A07-0608
Location			153-SB-070	153-SB-071	153-SB-074	153-SB-A03	153-SB-A04	153-SB-A07
Sample Depth			1-1.5 ft	4.5-5 ft	1.5-2 ft	08-10 ft	12-14 ft	06-08 ft
Sample Date	RDC	NRDC	5/20/2011	5/20/2011	5/20/2011	5/21/1997	5/21/1997	5/22/1997
Pesticides (mg/kg)								
4,4'-DDD	3	13	NA	NA	NA	0.0062 U	0.0041 U	0.0048 U
4,4'-DDE	2	9	NA	NA	NA	0.0062 U	0.0041 U	0.0048 U
4,4'-DDT	2	8	NA	NA	NA	0.0062 U	0.0041 U	0.0048 U
ALDRIN	0.04	0.2	NA	NA	NA	0.0032 U	0.0021 U	0.0025 U
ALPHA-BHC	0.1	0.5	NA	NA	NA	0.0032 U	0.0021 U	0.0025 U
ALPHA-CHLORDANE	NS	NS	NA	NA	NA	0.0032 U	0.0021 U	0.0025 U
BETA-BHC	0.4	2	NA	NA	NA	0.0032 U	0.0021 U	0.0025 U
BETA-CHLORDANE	NS	NS	NA	NA	NA	0.0032 U	0.0021 U	0.0025 U
DELTA-BHC	NS	NS	NA	NA	NA	0.0032 U	0.0021 U	0.0025 U
DIELDRIN	0.04	0.2	NA	NA	NA	0.0062 U	0.0041 U	0.0048 U
ENDOSULFAN I	NS	NS	NA	NA	NA	0.0032 U	0.0021 U	0.0025 U
ENDOSULFAN II	NS	NS	NA	NA	NA	0.0062 U	0.0041 U	0.0048 U
ENDOSULFAN SULFATE	470	6800	NA	NA	NA	0.0062 U	0.0041 U	0.0048 U
ENDRIN	23	340	NA	NA	NA	0.0062 U	0.0041 U	0.0048 U
ENDRIN ALDEHYDE	NS	NS	NA	NA	NA	0.0062 U	0.0041 U	0.0048 U
ENDRIN KETONE	NS	NS	NA	NA	NA	0.0062 U	0.0041 U	0.0048 U
GAMMA-BHC (LINDANE)	0.4	2	NA	NA	NA	0.0032 U	0.0021 U	0.0025 U
HEPTACHLOR	0.1	0.7	NA	NA	NA	0.0032 U	0.0021 U	0.0025 U
HEPTACHLOR EPOXIDE	0.07	0.3	NA	NA	NA	0.0032 U	0.0021 U	0.0025 U
METHOXYCHLOR	390	5700	NA	NA	NA	0.032 U	0.021 U	0.025 U
TOXAPHENE	0.6	3	NA	NA	NA	0.32 U	0.21 U	0.25 U

Notes:

RDC: NJDEP Residential Direct Contact Soil Remediation Standards [N.J.A.C. 7:26D; last amended 5/7/2012]

NRDC: NJDEP Non-Residential Direct Contact Soil Remediation Standards [N.J.A.C. 7:26D; 5/7/2012]

Bold and shaded values exceed NJDEP RDCSRS

Underlined values exceed NJDEP NRDCSRS

U: Compound was not detected at the indicated concentration.

J: Data indicates the presence of a compound that meets the identification criteria. The concentration given is an approximate value.

B: Reported value less than Reporting Limit, but greater than Instrument Detection Limit.

R: Rejected based on data validation

NA: Not Analyzed

NS: No Standard

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TABLE 4
SOIL SAMPLE RESULTS - VOCs, SVOCs, TAL METALS
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Field Sample ID			153-SB-A08-0810	153-SB-A09-0810	153-SB-A10-1214	153-SB-A12-0608	153-SB-A13-0810	153-SB-A16-0810	153-SB-A19-0810
Location			153-SB-A08	153-SB-A09	153-SB-A10	153-SB-A12	153-SB-A13	153-SB-A16	153-SB-A19
Sample Depth			08-10 ft	08-10 ft	12-14 ft	06-08 ft	08-10 ft	08-10 ft	08-10 ft
Sample Date	RDC	NRDC	5/22/1997	5/22/1997	5/22/1997	5/22/1997	5/22/1997	5/22/1997	5/27/1997
VOCs (mg/kg)									
1,1,1-TRICHLOROETHANE	290	4200	3.3 U	4.5 U	1.6 U	4.4 U	1.5 U	3.5 U	2 U
1,1,2,2-TETRACHLOROETHANE	1	3	**3.3** U	**4.5** U	**1.6** U	**4.4** U	**1.5** U	**3.5** U	**2** U
1,1,2-TRICHLOROETHANE	2	6	**3.3** U	**4.5** U	1.6 U	**4.4** U	1.5 U	**3.5** U	2 U
1,1-DICHLOROETHANE	8	24	3.3 U	4.5 U	1.6 U	4.4 U	1.5 U	3.5 U	2 U
1,1-DICHLOROETHENE	11	150	3.3 U	4.5 U	1.6 U	4.4 U	1.5 U	3.5 U	2 U
1,2-DICHLOROETHANE	0.9	3	**3.3** U	**4.5** U	**1.6** U	**4.4** U	**1.5** U	**3.5** U	**2** U
1,2-DICHLOROETHENE (TOTAL)	NS	NS	3.3 U	4.5 U	1.6 U	4.4 U	1.5 U	3.5 U	2 U
1,2-DICHLOROPROPANE	2	5	**3.3** U	**4.5** U	1.6 U	**4.4** U	1.5 U	**3.5** U	2 U
2-BUTANONE	3100	44000	3.3 U	4.5 U	1.6 U	4.4 U	1.5 U	3.5 U	2 U
2-HEXANONE	NS	NS	3.3 U	4.5 U	1.6 U	4.4 U	1.5 U	3.5 U	2 U
4-METHYL-2-PENTANONE	NS	NS	3.3 U	4.5 U	1.6 U	4.4 U	1.5 U	3.5 U	2 U
ACETONE	70000	NS	3.3 U	4.5 U	1.6 U	4.4 U	1.5 U	3.5 U	2 U
BENZENE	2	5	**3.3** U	**4.5** U	1.6 U	**4.4** U	1.5 U	**3.5** U	2 U
BROMODICHLOROMETHANE	1	3	**3.3** U	**4.5** U	**1.6** U	**4.4** U	**1.5** U	**3.5** U	**2** U
BROMOFORM	81	280	3.3 U	4.5 U	1.6 U	4.4 U	1.5 U	3.5 U	2 U
BROMOMETHANE	25	59	3.3 U	4.5 U	1.6 U	4.4 U	1.5 U	3.5 U	2 U
CARBON DISULFIDE	7800	110000	3.3 U	4.5 U	1.6 U	4.4 U	1.5 U	3.5 U	0.15 J
CARBON TETRACHLORIDE	0.6	2	**3.3** U	**4.5** U	**1.6** U	**4.4** U	**1.5** U	**3.5** U	**2** U
CHLOROBENZENE	510	7400	3.3 U	4.5 U	1.6 U	4.4 U	1.5 U	3.5 U	2 U
CHLOROETHANE	220	1100	3.3 U	4.5 U	1.6 U	4.4 U	1.5 U	3.5 U	2 U
CHLOROFORM	0.6	2	**3.3** U	**4.5** U	**1.6** U	**4.4** U	**1.5** U	**3.5** U	**2** U
CHLOROMETHANE	4	12	3.3 U	**4.5** U	1.6 U	**4.4** U	1.5 U	3.5 U	2 U
CIS-1,3-DICHLOROPROPENE	2	7	**3.3** U	**4.5** U	1.6 U	**4.4** U	1.5 U	**3.5** U	2 U
ETHYLBENZENE	7800	110000	3.3 U	4.5 U	1.6 U	4.4 U	1.5 U	3.5 U	2 U
METHYLENE CHLORIDE	34	97	3.3 U	4.5 U	0.11 J	0.24 J	1.5 U	3.5 U	2 U
STYRENE	90	260	3.3 U	4.5 U	1.6 U	4.4 U	1.5 U	3.5 U	2 U
TETRACHLOROETHENE	2	5	**3.3** U	**4.5** U	1.6 U	**4.4** U	1.5 U	**3.5** U	2 U
TOLUENE	6300	91000	3.3 U	4.5 U	1.6 U	4.4 U	1.5 U	3.5 U	0.21 J
TRANS-1,3-DICHLOROPROPENE	2	7	**3.3** U	**4.5** U	1.6 U	**4.4** U	1.5 U	**3.5** U	2 U
TRICHLOROETHENE	7	20	3.3 U	4.5 U	1.6 U	4.4 U	1.5 U	3.5 U	2 U
VINYL CHLORIDE	0.7	2	**3.3** U	**4.5** U	**1.6** U	**4.4** U	**1.5** U	**3.5** U	**2** U
XYLENES, TOTAL	12000	170000	3.3 U	4.5 U	1.6 U	4.4 U	1.5 U	3.5 U	2 U

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TABLE 4
SOIL SAMPLE RESULTS - VOCs, SVOCs, TAL METALS
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Field Sample ID			153-SB-A08-0810	153-SB-A09-0810	153-SB-A10-1214	153-SB-A12-0608	153-SB-A13-0810	153-SB-A16-0810	153-SB-A19-0810
Location			153-SB-A08	153-SB-A09	153-SB-A10	153-SB-A12	153-SB-A13	153-SB-A16	153-SB-A19
Sample Depth			08-10 ft	08-10 ft	12-14 ft	06-08 ft	08-10 ft	08-10 ft	08-10 ft
Sample Date	RDC	NRDC	5/22/1997	5/22/1997	5/22/1997	5/22/1997	5/22/1997	5/22/1997	5/27/1997
SVOCs (mg/kg)									
1,1'-BIPHENYL	3100	34000							
1,2,4-TRICHLOROBENZENE	73	820	4.2 U	9.6 U	0.38 U	**140** U	0.44 U	4.1 U	0.56 U
1,2-DICHLOROBENZENE	5300	59000	4.2 U	9.6 U	0.38 U	140 U	0.44 U	4.1 U	0.56 U
1,3-DICHLOROBENZENE	5300	59000	4.2 U	9.6 U	0.38 U	140 U	0.44 U	4.1 U	0.56 U
1,4-DICHLOROBENZENE	5	13	4.2 U	**9.6** U	0.38 U	**140** U	0.44 U	4.1 U	0.56 U
2,2'-OXYBIS(1-CHLOROPROPANE)	23	67	4.2 U	9.6 U	0.38 U	**140** U	0.44 U	4.1 U	0.56 U
2,4,5-TRICHLOROPHENOL	6100	68000	10 U	23 U	0.94 U	340 U	1.1 U	10 U	1.4 U
2,4,6-TRICHLOROPHENOL	19	74	4.2 U	9.6 U	0.38 U	**140** U	0.44 U	4.1 U	0.56 U
2,4-DICHLOROPHENOL	180	2100	4.2 U	9.6 U	0.38 U	140 U	0.44 U	4.1 U	0.56 U
2,4-DIMETHYLPHENOL	1200	14000	4.2 U	9.6 U	0.38 U	140 U	0.44 U	4.1 U	0.56 U
2,4-DINITROPHENOL	120	1400	10 U	23 U	0.94 U	**340** U	1.1 U	10 U	1.4 U
2,4-DINITROTOLUENE	0.7	3	**4.2** U	**9.6** U	0.38 U	**140** U	0.44 U	**4.1** U	0.56 U
2,6-DINITROTOLUENE	0.7	3	**4.2** U	**9.6** U	0.38 U	**140** U	0.008 J	**4.1** U	0.56 U
2-CHLORONAPHTHALENE	NS	NS	4.2 U	9.6 U	0.38 U	140 U	0.44 U	4.1 U	0.56 U
2-CHLOROPHENOL	310	2200	4.2 U	9.6 U	0.38 U	140 U	0.44 U	4.1 U	0.56 U
2-METHYLNAPHTHALENE	230	2400	4.2 U	0.29 J	0.38 U	87 J	0.013 J	0.14 J	0.008 J
2-METHYLPHENOL	310	3400	4.2 U	9.6 U	0.38 U	140 U	0.44 U	4.1 U	0.56 U
2-NITROANILINE	39	23000	10 U	23 U	0.94 U	**340** U	1.1 U	10 U	1.4 U
2-NITROPHENOL	NS	NS	4.2 U	9.6 U	0.38 U	140 U	0.44 U	4.1 U	0.56 U
3,3'-DICHLOROBENZIDINE	1	4	**4.2** U	**9.6** U	0.38 U	**140** U	0.44 U	**4.1** U	0.56 U
3-NITROANILINE	NS	NS	10 U	23 U	0.94 U	340 U	1.1 U	10 U	1.4 U
4,6-DINITRO-2-METHYLPHENOL	6	68	**10** U	**23** U	0.94 U	**340** U	1.1 U	**10** U	1.4 U
4-BROMOPHENYL PHENYL ETHER	NS	NS	4.2 U	9.6 U	0.38 U	140 U	0.44 U	4.1 U	0.56 U
4-CHLORO-3-METHYLPHENOL	NS	NS	4.2 U	9.6 U	0.38 U	140 U	0.44 U	4.1 U	0.56 U
4-CHLOROANILINE	9	66	4.2 U	**9.6** U	0.38 U	**140** U	0.44 U	4.1 U	0.56 U
4-CHLOROPHENYL PHENYL ETHER	NS	NS	4.2 U	9.6 U	0.38 U	140 U	0.44 U	4.1 U	0.56 U
4-METHYLPHENOL	31	340	4.2 U	0.27 J	0.38 U	**140** U	0.01 J	0.23 J	0.056 J
4-NITROANILINE	NS	NS	10 U	23 U	0.94 U	340 U	1.1 U	10 U	1.4 U
4-NITROPHENOL	NS	NS	10 U	23 U	0.94 U	340 U	1.1 U	10 U	1.4 U
ACENAPHTHENE	3400	37000	4.2 U	0.17 J	0.38 U	120 J	0.44 U	0.1 J	0.015 J
ACENAPHTHYLENE	NS	300000	4.2 U	0.35 J	0.38 U	11 J	0.44 U	0.28 J	0.56 U
ACETOPHENONE	2	5	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	17000	30000	4.2 U	0.77 J	0.38 U	160	0.004 J	0.45 J	0.018 J
ATRAZINE	210	2400	NA	NA	NA	NA	NA	NA	NA
BENZALDEHYDE	6100	68000	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	0.6	2	**4.2** U	**2.3** J	0.38 U	**300**	0.007 J	**1.1** J	0.56 U
BENZO(A)PYRENE	0.2	0.2	**4.2** U	**1.5** J	0.38 U	**290**	0.005 J	**0.95** J	0.051 J
BENZO(B)FLUORANTHENE	0.6	2	**4.2** U	**2.5** J	0.38 U	**340**	0.009 J	**1.5** J	0.09 J
BENZO(G,H,I)PERYLENE	380000	30000	4.2 U	0.88 J	0.38 U	180	0.44 U	0.64 J	0.031 J
BENZO(K)FLUORANTHENE	6	23	4.2 U	0.89 J	0.38 U	**120** J	0.44 U	0.65 J	0.56 U

Prepared by: TG
Checked by: EB

TABLE 4
SOIL SAMPLE RESULTS - VOCs, SVOCs, TAL METALS
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Field Sample ID			153-SB-A08-0810	153-SB-A09-0810	153-SB-A10-1214	153-SB-A12-0608	153-SB-A13-0810	153-SB-A16-0810	153-SB-A19-0810
Location			153-SB-A08	153-SB-A09	153-SB-A10	153-SB-A12	153-SB-A13	153-SB-A16	153-SB-A19
Sample Depth			08-10 ft	08-10 ft	12-14 ft	06-08 ft	08-10 ft	08-10 ft	08-10 ft
Sample Date	RDC	NRDC	5/22/1997	5/22/1997	5/22/1997	5/22/1997	5/22/1997	5/22/1997	5/27/1997
BIS(2-CHLOROETHOXY)METHANE	NS	NS	4.2 U	9.6 U	0.38 U	140 U	0.44 U	4.1 U	0.56 U
BIS(2-CHLOROETHYL)ETHER	0.4	2	**4.2** U	**9.6** U	0.38 U	**140** U	**0.44** U	**4.1** U	**0.56** U
BIS(2-ETHYLHEXYL)PHTHALATE	35	140	4.2 U	9.6 U	0.057 J	**140** U	0.44 U	4.1 U	0.092 J
BUTYLBENZYL PHTHALATE	1200	14000	4.2 U	9.6 U	0.38 U	140 U	0.44 U	4.1 U	0.56 U
CAPROLACTAM	31000	340000	NA	NA	NA	NA	NA	NA	NA
CARBAZOLE	24	96	4.2 U	0.18 J	0.38 U	**100** J	0.44 U	0.092 J	0.56 U
CHRYSENE	62	230	4.2 U	2.3 J	0.38 U	**300**	0.006 J	1.3 J	0.56 U
DI-N-BUTYL PHTHALATE	6100	68000	4.2 U	9.6 U	0.38 U	140 U	0.44 U	4.1 U	0.56 U
DI-N-OCTYL PHTHALATE	2400	27000	4.2 U	9.6 U	0.38 U	140 U	0.44 U	4.1 U	0.56 U
DIBENZO(A,H)ANTHRACENE	0.2	0.2	**4.2** U	**9.6** U	**0.38** U	**39** J	**0.44** U	0.18 J	**0.56** U
DIBENZOFURAN	NS	NS	4.2 U	0.25 J	0.38 U	100 J	0.005 J	0.13 J	0.006 J
DIETHYL PHTHALATE	49000	550000	4.2 U	9.6 U	0.38 U	140 U	0.44 U	4.1 U	0.56 U
DIMETHYL PHTHALATE	NS	NS	4.2 U	9.6 U	0.38 U	140 U	0.44 U	4.1 U	0.56 U
FLUORANTHENE	2300	24000	4.2 U	4 J	0.38 U	770	0.013 J	2.1 J	0.1 J
FLUORENE	2300	24000	4.2 U	0.27 J	0.38 U	150	0.005 J	0.17 J	0.01 J
HEXACHLOROBENZENE	0.3	1	**4.2** U	**9.6** U	**0.38** U	**140** U	**0.44** U	**4.1** U	**0.56** U
HEXACHLOROBUTADIENE	6	25	4.2 U	**9.6** U	0.38 U	**140** U	0.44 U	4.1 U	0.56 U
HEXACHLOROCYCLOPENTADIENE	45	110	4.2 U	9.6 U	0.38 U	**140** U	0.44 U	4.1 U	0.56 U
HEXACHLOROETHANE	35	140	4.2 U	9.6 U	0.38 U	**140** U	0.44 U	4.1 U	0.56 U
INDENO(1,2,3-CD)PYRENE	0.6	2	**4.2** U	**0.84** J	0.38 U	**180**	0.44 U	0.59 J	0.028 J
ISOPHORONE	510	2000	4.2 U	9.6 U	0.38 U	140 U	0.44 U	4.1 U	0.56 U
N-NITROSO-DI-N-PROPYLAMINE	0.2	0.3	**4.2** U	**9.6** U	**0.38** U	**140** U	**0.44** U	**4.1** U	**0.56** U
N-NITROSODIPHENYLAMINE	99	390	4.2 U	9.6 U	0.38 U	**140** U	0.44 U	4.1 U	0.56 U
NAPHTHALENE	6	17	0.11 J	0.51 J	0.38 U	**170**	0.024 J	0.22 J	0.022 J
NITROBENZENE	31	340	4.2 U	9.6 U	0.38 U	**140** U	0.44 U	4.1 U	0.56 U
PENTACHLOROPHENOL	3	10	**10** U	**23** U	0.94 U	**340** U	1.1 U	**10** U	1.4 U
PHENANTHRENE	NS	300000	4.2 U	1.7 J	0.38 U	960	0.018 J	0.88 J	0.073 J
PHENOL	18000	210000	4.2 U	9.6 U	0.38 U	140 U	0.035 J	4.1 U	0.56 U
PYRENE	1700	18000	4.2 U	4.4 J	0.38 U	690	0.014 J	2.2 J	0.086 J

Prepared by: TG
Checked by: EB

TABLE 4
SOIL SAMPLE RESULTS - VOCs, SVOCs, TAL METALS
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Field Sample ID			153-SB-A08-0810	153-SB-A09-0810	153-SB-A10-1214	153-SB-A12-0608	153-SB-A13-0810	153-SB-A16-0810	153-SB-A19-0810
Location			153-SB-A08	153-SB-A09	153-SB-A10	153-SB-A12	153-SB-A13	153-SB-A16	153-SB-A19
Sample Depth			08-10 ft	08-10 ft	12-14 ft	06-08 ft	08-10 ft	08-10 ft	08-10 ft
Sample Date	RDC	NRDC	5/22/1997	5/22/1997	5/22/1997	5/22/1997	5/22/1997	5/22/1997	5/27/1997
METALs (mg/kg)									
ALUMINUM	78000	NS	17400	15100	3820	23300	2350	10900	3520
ANTIMONY	31	450	2.2 J	13.2 J	0.51 UJ	3 UJ	1.8 J	13 J	2.4 J
ARSENIC	19	19	6	**250**	1.6 J	**47.9**	6.2	**331**	9.4
BARIUM	16000	59000	103 J	1650	19.1 J	1180	77.5	3200	212
BERYLLIUM	16	140	0.15 J	0.76 J	0.24 J	0.28 J	0.32 J	0.76 J	0.35 J
CADMIUM	78	78	0.15 U	4	0.07 U	0.4 U	0.08 U	2.6	0.27 J
CALCIUM	NS	NS	378000	33500	352 J	196000	49700	9410	3080
CHROMIUM	NS	NS	14000 J	41300 J	11 J	29000 J	4440 J	28200 J	181 J
COBALT	1600	590	86.9	20.6 J	3.8 J	120	5.1 J	16.9 J	4.6 J
COPPER	3100	45000	36.9	260	4.6 J	360	20.8	300	29.8
IRON	NS	NS	30500	71800	8330	42200	4710	66300	8670
LEAD	400	800	9.4 J	**588** J	2.8 J	155 J	5.3 J	**710** J	202 J
MAGNESIUM	NS	NS	31200	15000	979 J	40500	2140	4270	356 J
MANGANESE	11000	5900	579	1240	84.2	977	28.7	492	36.6
MERCURY	23	65	0.13 UJ	**299** J	0.06 UJ	**201** J	1.2 J	**398** J	0.08 UJ
NICKEL	1600	23000	442	122	5.7 J	587	16.7	99.4	11.2 J
POTASSIUM	NS	NS	69.5 B	2440 J	220 J	216 B	190 J	1140 J	634 J
SELENIUM	390	5700	1.6 U	3.7 U	0.75 U	4.3 U	1 J	5.9	1.3 J
SILVER	390	5700	0.52 U	2.4 J	0.23 U	0.67 U	0.27 U	2.4 J	0.34 U
SODIUM	NS	NS	689 J	3360	86.1 B	740 J	282 J	601 J	502 J
THALLIUM	5	79	1.6 U	2.1 B	0.73 U	4.2 U	0.83 U	2.4 B	1.1 U
VANADIUM	78	1100	**433**	75.4	11.3 B	**599**	21.3	76.6	23.5
ZINC	23000	110000	175	1140	20.5 J	492	9.4	1230	283
PCBs (mg/kg)									
AROCLOR-1016	NS	NS	0.085 U	0.096 U	0.038 U	0.11 U	0.044 U	0.082 U	0.056 U
AROCLOR-1221	NS	NS	0.17 U	0.19 U	0.078 U	0.22 U	0.09 U	0.17 U	0.11 U
AROCLOR-1232	NS	NS	0.085 U	0.096 U	0.038 U	0.11 U	0.044 U	0.082 U	0.056 U
AROCLOR-1242	NS	NS	0.085 U	0.096 U	0.038 U	0.11 U	0.044 U	0.082 U	0.056 U
AROCLOR-1248	NS	NS	0.085 U	0.096 U	0.038 U	0.11 U	0.044 U	0.082 U	0.056 U
AROCLOR-1254	NS	NS	0.085 U	0.096 U	0.038 U	0.11 U	0.044 U	0.082 U	0.056 U
AROCLOR-1260	NS	NS	0.085 U	0.096 U	0.038 U	0.11 U	0.044 U	0.082 U	0.056 U

Prepared by: TG
Checked by: EB

TABLE 4
SOIL SAMPLE RESULTS - VOCs, SVOCs, TAL METALS
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Field Sample ID			153-SB-A08-0810	153-SB-A09-0810	153-SB-A10-1214	153-SB-A12-0608	153-SB-A13-0810	153-SB-A16-0810	153-SB-A19-0810
Location			153-SB-A08	153-SB-A09	153-SB-A10	153-SB-A12	153-SB-A13	153-SB-A16	153-SB-A19
Sample Depth			08-10 ft	08-10 ft	12-14 ft	06-08 ft	08-10 ft	08-10 ft	08-10 ft
Sample Date	RDC	NRDC	5/22/1997	5/22/1997	5/22/1997	5/22/1997	5/22/1997	5/22/1997	5/27/1997
Pesticides (mg/kg)									
4,4'-DDD	3	13	0.0085 U	0.0096 U	0.0038 U	0.011 U	0.0044 U	0.0082 U	0.0056 U
4,4'-DDE	2	9	0.0085 U	0.0096 U	0.0038 U	0.011 U	0.0044 U	0.0082 U	0.0056 U
4,4'-DDT	2	8	0.0085 U	0.0096 U	0.0038 U	0.011 U	0.0044 U	0.0082 U	0.0056 U
ALDRIN	0.04	0.2	0.0044 U	0.0049 U	0.002 U	0.0057 U	0.0023 U	0.0042 U	0.0029 U
ALPHA-BHC	0.1	0.5	0.0044 U	0.0049 U	0.002 U	0.0057 U	0.0023 U	0.0042 U	0.0029 U
ALPHA-CHLORDANE	NS	NS	0.0044 U	0.0049 U	0.002 U	0.0057 U	0.0023 U	0.0042 U	0.0029 U
BETA-BHC	0.4	2	0.0044 U	0.0049 U	0.002 U	0.0057 U	0.0023 U	0.0042 U	0.0029 U
BETA-CHLORDANE	NS	NS	0.0044 U	0.0049 U	0.002 U	0.0057 U	0.0023 U	0.0042 U	0.0029 U
DELTA-BHC	NS	NS	0.0044 U	0.0049 U	0.002 U	0.0057 U	0.0023 U	0.0042 U	0.0029 U
DIELDRIN	0.04	0.2	0.0085 U	0.0096 U	0.0038 U	0.011 U	0.0044 U	0.0082 U	0.0056 U
ENDOSULFAN I	NS	NS	0.0044 U	0.0049 U	0.002 U	0.0057 U	0.0023 U	0.0042 U	0.0029 U
ENDOSULFAN II	NS	NS	0.0085 U	0.0096 U	0.0038 U	0.028 P	0.0044 U	0.0082 U	0.0056 U
ENDOSULFAN SULFATE	470	6800	0.0085 U	0.0096 U	0.0038 U	0.011 U	0.0044 U	0.0082 U	0.0056 U
ENDRIN	23	340	0.0085 U	0.0096 U	0.0038 U	0.011 U	0.0044 U	0.0082 U	0.0056 U
ENDRIN ALDEHYDE	NS	NS	0.0085 U	0.0096 U	0.0038 U	0.011 U	0.0044 U	0.0082 U	0.0056 U
ENDRIN KETONE	NS	NS	0.0085 U	0.016 U	0.0038 U	0.011 U	0.0044 U	0.0082 U	0.0056 U
GAMMA-BHC (LINDANE)	0.4	2	0.0044 U	0.0049 U	0.002 U	0.0057 U	0.0023 U	0.0042 U	0.0029 U
HEPTACHLOR	0.1	0.7	0.0044 U	0.0049 U	0.002 U	0.0057 U	0.0023 U	0.0042 U	0.0029 U
HEPTACHLOR EPOXIDE	0.07	0.3	0.0044 U	0.0049 U	0.002 U	0.0057 U	0.0023 U	0.0042 U	0.0029 U
METHOXYCHLOR	390	5700	0.044 U	0.049 U	0.02 U	1 P	0.023 U	0.042 U	0.029 U
TOXAPHENE	0.6	3	0.44 U	0.49 U	0.2 U	0.57 U	0.23 U	0.42 U	0.29 U

Notes:

RDC: NJDEP Residential Direct Contact Soil Remediation Standards [N.J.A.C. 7:26D; last amended 5/7/2012]

NRDC: NJDEP Non-Residential Direct Contact Soil Remediation Standards [N.J.A.C. 7:26D; 5/7/2012]

Bold and shaded values exceed NJDEP RDCSRS

Underlined values exceed NJDEP NRDCSRS

U: Compound was not detected at the indicated concentration.

J: Data indicates the presence of a compound that meets the identification criteria. The concentration given is an approximate value.

B: Reported value less than Reporting Limit, but greater than Instrument Detection Limit.

R: Rejected based on data validation

NA: Not Analyzed

NS: No Standard

Prepared by: TG
Checked by: EB

TABLE 5
TEMPORARY WELL POINT GROUNDWATER SAMPLE RESULTS
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Location ID	Lab Sample ID	Date Sampled	Filtered	CHROMIUM (ug/L)	HEXAVALENT CHROMIUM (ug/L)
153-TWP-001	JA41930-1	3/16/2010	U	**2140**	**2100**
153-TWP-001	JA41930-1F	3/16/2010	F	**2150**	**2100**
153-TWP-001	JA41930-4	3/16/2010 DP	U	**2150**	**1800**
153-TWP-001	JA41930-4F	3/16/2010 DP	F	**2310**	**1900**
153-TWP-002	JA41930-2	3/16/2010	U	**19000**	**15900**
153-TWP-002	JA41930-2F	3/16/2010	F	**17200**	**16100**
153-TWP-003	JA41930-3	3/16/2010	U	**9670**	**9100**
153-TWP-003	JA41930-3F	3/16/2010	F	**10100**	**9300**
153-TWP-004	JA87257-1	9/26/2011	U	34.2	5.5 UJ
153-TWP-004	JA87257-1F	9/26/2011	F	4 U	5.5 UJ
153-TWP-005	JA87257-2	9/26/2011	U	**126**	5.5 UJ
153-TWP-005	JA87257-2F	9/26/2011	F	7.1	5.5 UJ
153-TWP-006	JA87257-3	9/26/2011	U	70	5.5 UJ
153-TWP-006	JA87257-3F	9/26/2011	F	4 U	5.5 UJ

Notes:

Bold and shaded concentrations exceed the GWQS for total chromium (70 ug/L).

GWQS: NJDEP Ground Water Quality Standards, N.J.A.C 7:9C; last amended July 2010.

U: Compound was not detected at the indicated detection limit.

J: Data indicates the presence of a compound that meets the identification criteria. The concentration given is an approximate value.

UJ: The compound was not detected at the indicated concentration. The result is less than the specified quantitation limit but greater than or equal to the method detection limit.

DP: Duplicate Sample

F denotes filtered sample; U denotes unfiltered sample

Prepared by: TG
Checked by: EB

TABLE 6
GROUNDWATER SAMPLE RESULTS
STUDY AREA 5 - SITE 153 FORMER MORRIS CANAL SITE
JERSEY CITY, NEW JERSEY

Location ID	Field Sample ID	Lab Sample ID	Date Sampled	Filtered	CHROMIUM (ug/L)	HEXAVALENT CHROMIUM (ug/L)
153-MW-2	153-MW-A15-071806-1	JA59191-3	10/19/2010	U	4 U	5.5 UJ
153-MW-2	153-MW-A15-071806-1F	JA59191-3F	10/19/2010	F	4 U	5.5 UJ
153-MW-2	153-MW-A13-071906-1	JA74099-2	4/26/2011	U	4 U	5.5 UJ
153-MW-2	153-MW-A13-071906-1F	JA74099-2F	4/26/2011	F	4 U	5.5 UJ
153-MW-5	153-MW-2-101910	JA59191-1	10/19/2010	U	4 U	5.5 UJ
153-MW-5	153-MW-2-101910	JA59191-1F	10/19/2010	F	4 U	5.5 UJ
153-MW-5	153-MW-5-101910DP	JA59191-2	10/19/2010	U	4 U	5.5 UJ
153-MW-5	153-MW-5-101910DPF	JA59191-2F	10/19/2010	F	4 U	5.5 UJ
153-MW-5	153-MW-5-101910DP	JA74099-1	4/26/2011	U	4 U	5.5 UJ
153-MW-5	153-MW-5-101910DPF	JA74099-1F	4/26/2011	F	4 U	5.5 UJ
153-MW-A13	153-MW-A13-01	106184	01/06/1999	U	**1830** J	**1330** J
153-MW-A13	153-MW-A13-01-F	106188	01/06/1999	F	**207** J	**571** J
153-MW-A13	153-MW-A13-F	421755	04/14/2003	F	**892**	**772**
153-MW-A13	153-MW-A13-101910	J36122-3	7/19/2006	U	**1090**	**1100**
153-MW-A13	153-MW-A13-101910F	J36122-3F	7/19/2006	F	**133**	53
153-MW-A13	153-MW-A15-101910	JA59163-1	10/19/2010	U	**763**	19 J
153-MW-A13	153-MW-A15-101910DP	JA59163-1F	10/19/2010	F	17.2 J	10 UJ
153-MW-A13	153-MW-A15-101910DPF	JA87257-5	9/26/2011	U	**666**	**530** J
153-MW-A13	153-MW-A15-101910F	JA87257-5F	9/26/2011	F	**345**	**230** J
153-MW-A15	153-MW-A15-01	134059	05/26/1999	U	20.2	10 U
153-MW-A15	153-MW-A15-01-F	134063	05/26/1999	F	13.6	10 U
153-MW-A15	153-MW-A15-02	143592	07/14/1999	U	24.9	10 UJ
153-MW-A15	153-MW-A15-02-F	143596	07/14/1999	F	11.8	10 UJ
153-MW-A15	153-MW-A15-071806-1	J35983-1	07/18/2006	U	60.7	50 U
153-MW-A15	153-MW-A15-071806-1F	J35983-1F	07/18/2006	F	10 U	50 U
153-MW-A15	153-MW-5-042611	JA59163-2	10/19/2010	U	**161**	10 UJ
153-MW-A15	153-MW-5-042611F	JA59163-3	10/19/2010	U	**288**	10 UJ
153-MW-A15	153-MW-A15-092311	JA59163-3F	10/19/2010	F	10 UJ	10 UJ
153-MW-A15	153-MW-A15-092311F	JA59163-2F	10/19/2010	F	10 UJ	10 UJ
153-MW-A15	153-MW-A13-092611	JA87096-1	9/23/2011	U	**71.4**	5.5 UJ
153-MW-A15	153-MW-A13F-092611	JA87096-1F	9/23/2011	F	10.2	5.5 UJ

Notes:

Bold and shaded concentrations exceed the GWQS for total chromium (70 ug/L).

GWQS: NJDEP Ground Water Quality Standards (GWQS), N.J.A.C 7:9C; last amended July 2010.

U: Compound was not detected at the indicated detection limit.

J: Data indicates the presence of a compound that meets the identification criteria. The concentration given is an approximate value.

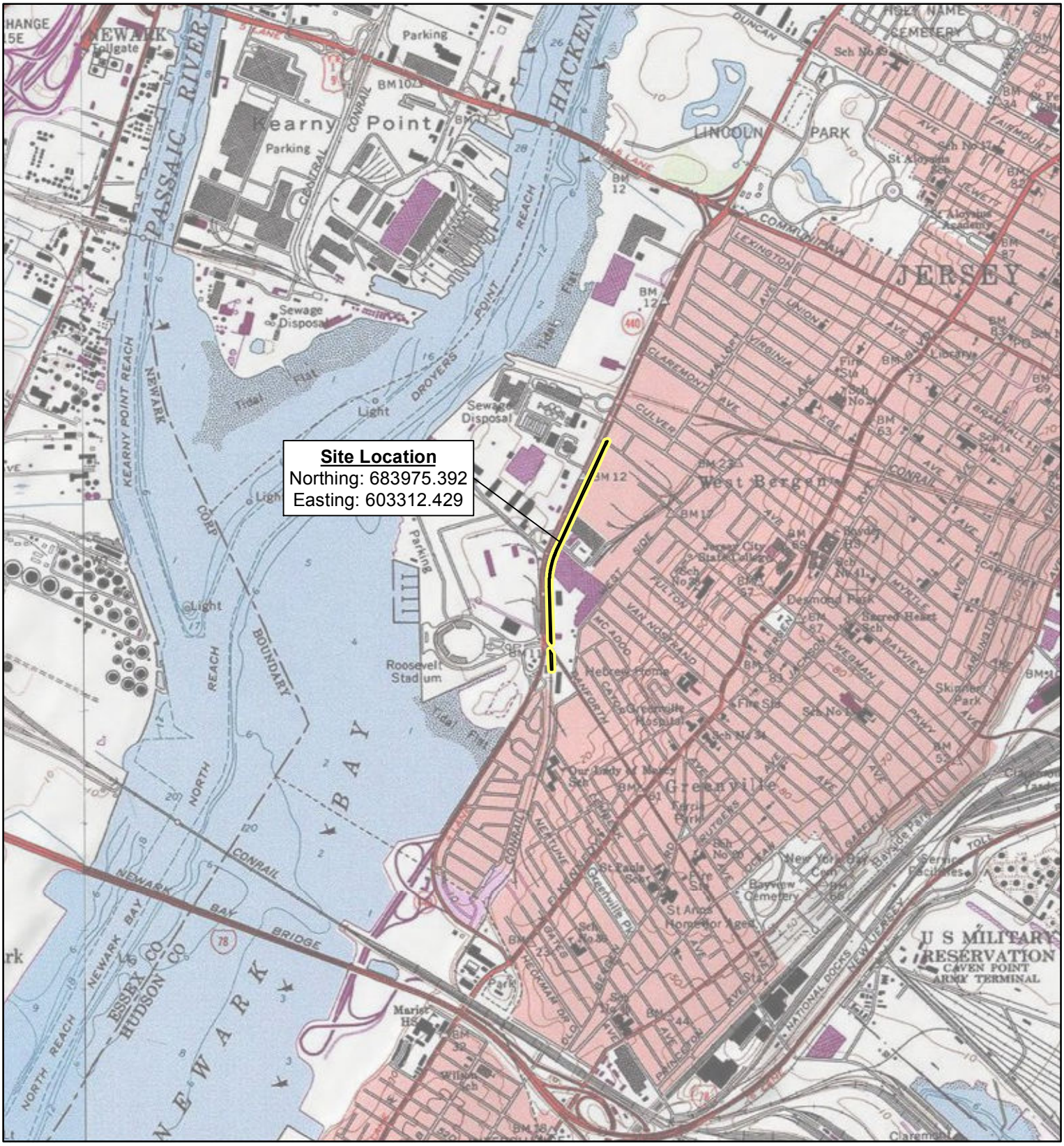
UJ: The compound was not detected at the indicated concentration. The result is less than the specified quantitation limit but greater than or equal to the method detection limit.

DP: Duplicate Sample

F denotes filtered sample; U denotes unfiltered sample

Prepared by: TG
Checked by: EB

FIGURES



NAD 1983 StatePlane New Jersey FIPS 2900 Feet

N

2,000 1,000 0 2,000

Scale In Feet

Legend

Site Boundary

amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

Figure 1
Site Location Map
Site 153 Former Morris Canal
Jersey City, New Jersey

PROJ. NO.	3480130371		12/1/2014	REV.
DWN. BY.	WSL	CHKD BY.	AG	

Legend

Site Boundary/Area of Concern (AOC)
AOC-1 - Hexavalent-Chromium Impacted Fill
AOC-2 - Historic Fill (Co-located with AOC-1)

Source: Esri World Imagery, DigitalGlobe, 2014.

300 150 0 300 600

Scale In Feet

Path: P:\GIS\Projects\HoneywellStudy Area 5\Site 153 - Former Morris Canal\20111118 - RI Report\Figure 1B Area of Concern Map.mxd

	Project Number: 3480130371	
	Prepared/Date: WSL 12/10/2014	Checked/Date: EGG 12/10/2014

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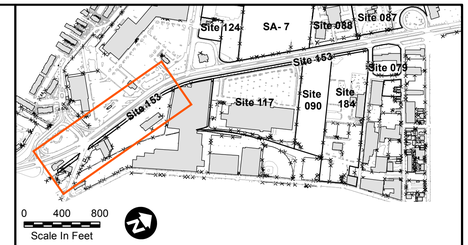
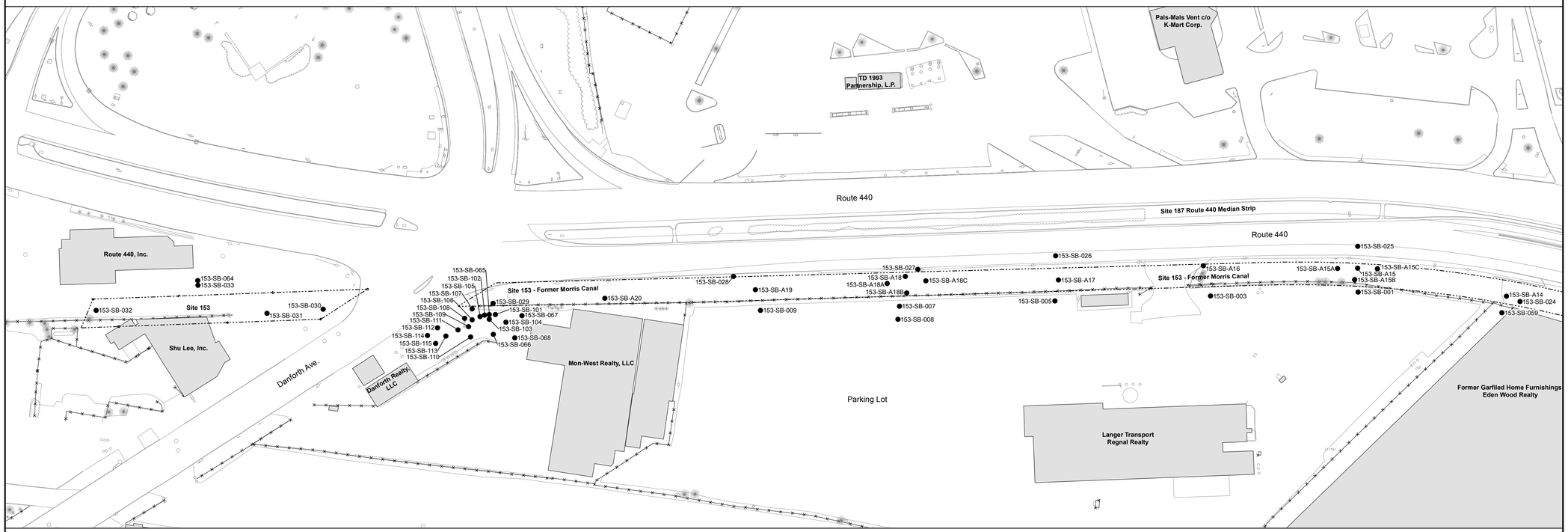
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

Figure 1B
Site Boundary/Area of Concern Map
Site 153 - Former Morris Canal
Jersey City, New Jersey





Legend

- Soil Boring Location
- Site Boundary
- Fenceline
- Buildings

60 30 0 60 120

Scale In Feet

REV.	DATE	STATUS	Prepared By	Checked By

Amec Project No.
3480110271

Prepared/Date
WSL 12/11/14

Checked/Date
AG 12/10/14

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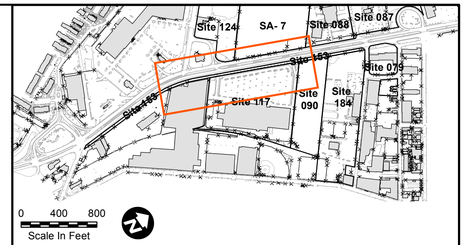
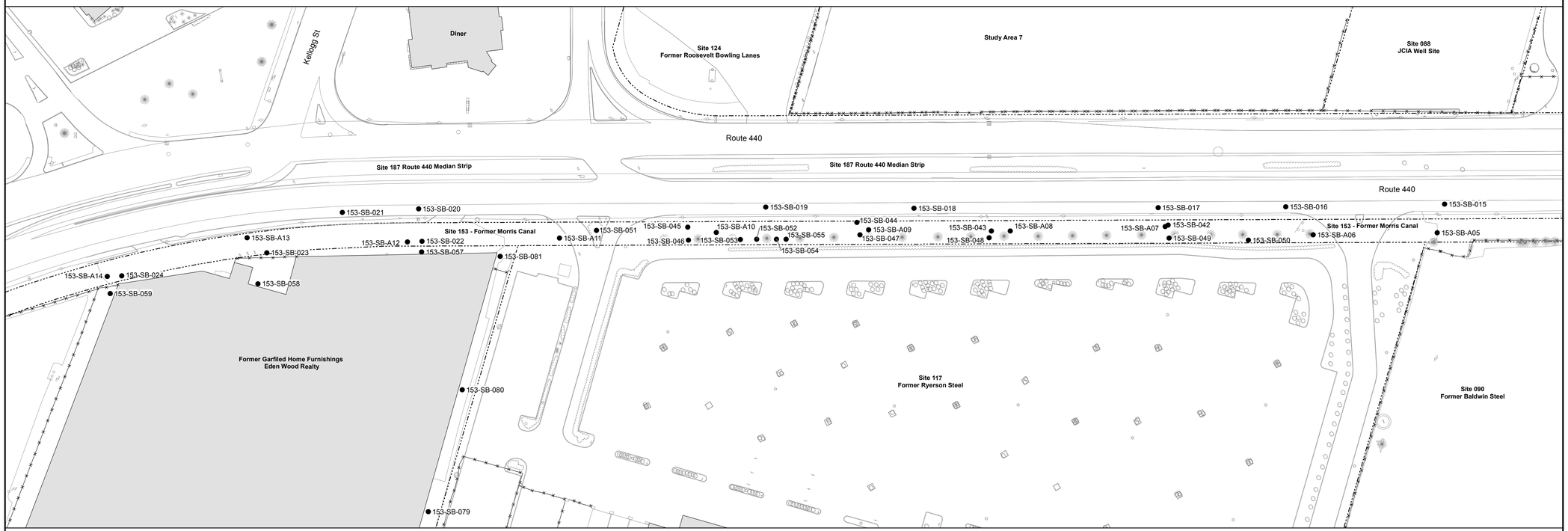
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

Figure 2A
Site Plan Detail
Site 153 South Lower Segment
Study Area 5
Site 153 - Former Morris Canal
Jersey City, New Jersey





Legend

- Soil Boring Location
- Site Boundary
- Fenceline
- Buildings

60 30 0 60 120

Scale In Feet

REV.	DATE	STATUS	Prepared By	Checked By

Amec Project No.
3480110271

Prepared/Date	*Checked/Date*
WSL 12/11/14	*AG 12/11/14*

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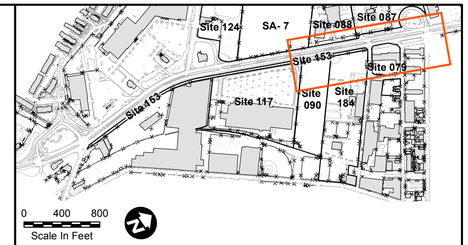
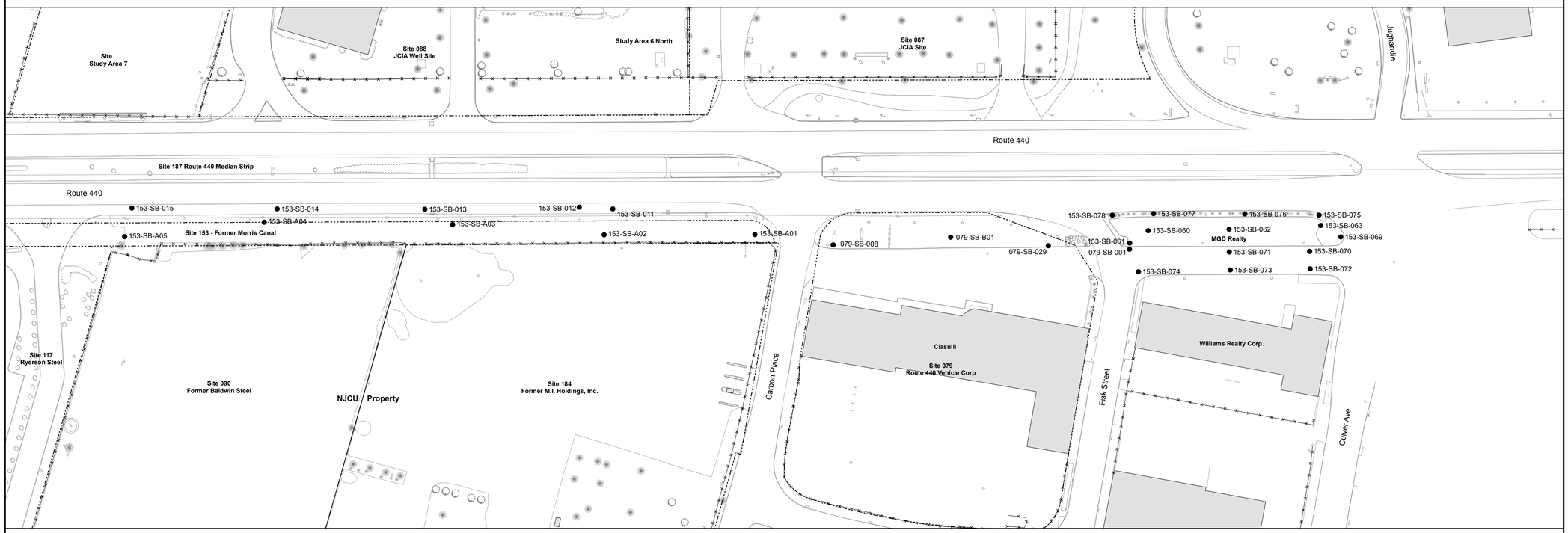
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

Figure 2B
Site Plan Detail
Site 153 South Lower Segment to South Upper Segment
Study Area 5
Site 153 - Former Morris Canal
Jersey City, New Jersey





Legend

- Soil Boring Location
- Site Boundary
- Fenceline
- Buildings

60 30 0 60 120

Scale In Feet

REV.	DATE	STATUS	Prepared By	Checked By

Amec Project No.
3480110271

Prepared/Date
WSL 12/14/14

Checked/Date
AG 12/23/14

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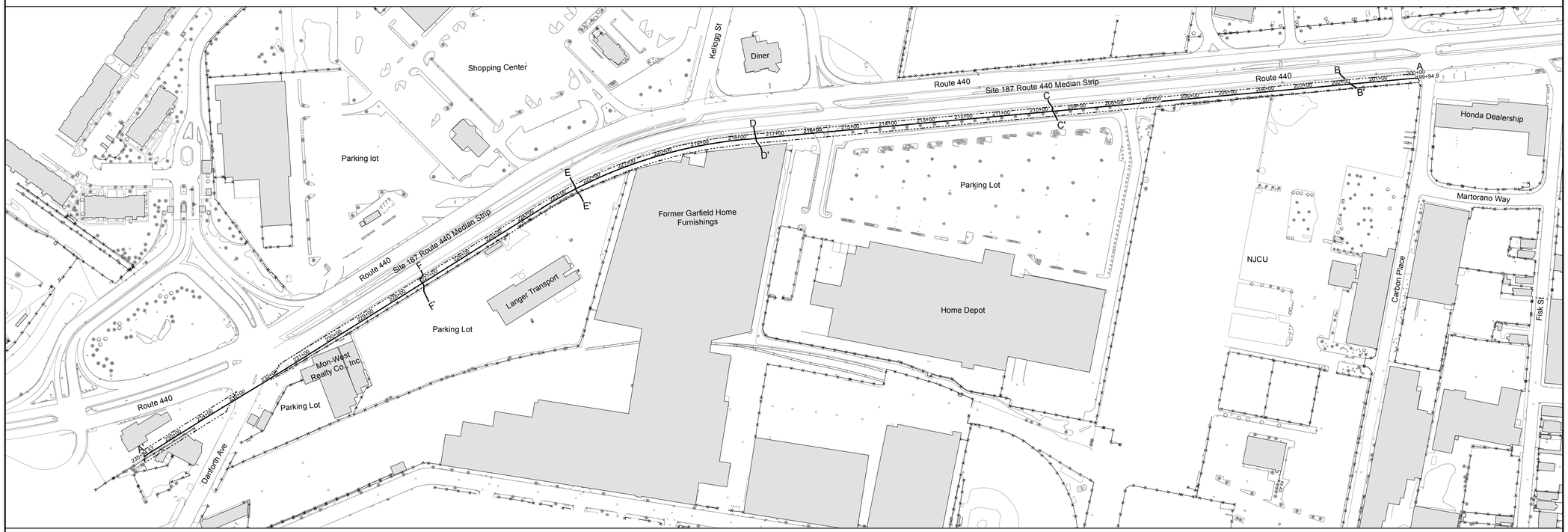
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

Figure 2C
Site Plan Detail
Site 153 North Segment
Study Area 5
Site 153 - Former Morris Canal
Jersey City, New Jersey



Legend

- Site Boundary
- Fenceline
- Buildings

150 0 150 300

Scale In Feet

REV.	DATE	STATUS	Prepared By	Checked By

Amec Project No.
3480110271

Prepared/Date
WSL 12/11/14

Checked/Date
TG 12/11/2014

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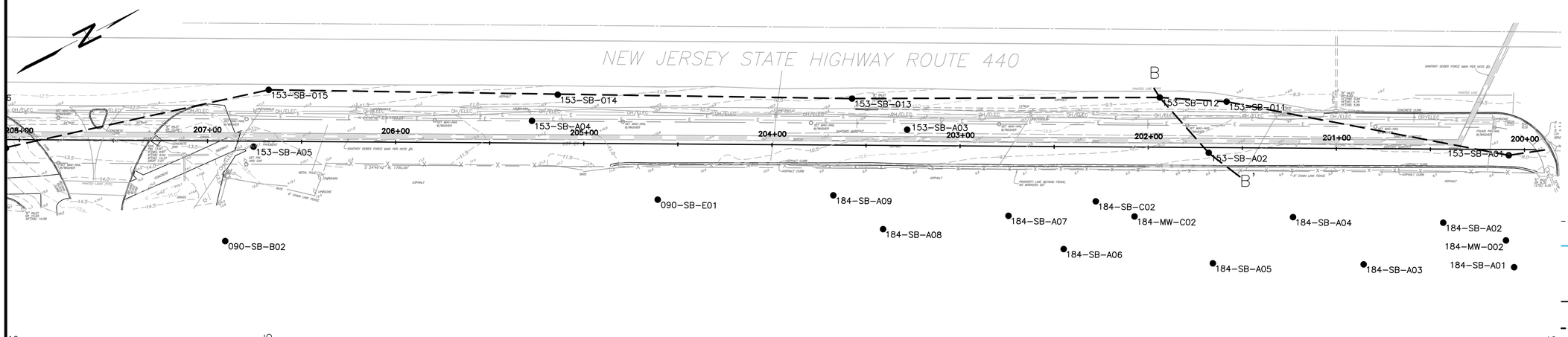
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

Figure 3
Cross-Section Site Plan
Study Area 5
Site 153 - Former Morris Canal
Jersey City, New Jersey



ASPHALT

FILL

FILL MIXED WITH COPR MATERIAL

MEADOW MAT (INCLUDING PEAT AND/OR ORGANIC SILTS/CLAYS)

SILT

SAND

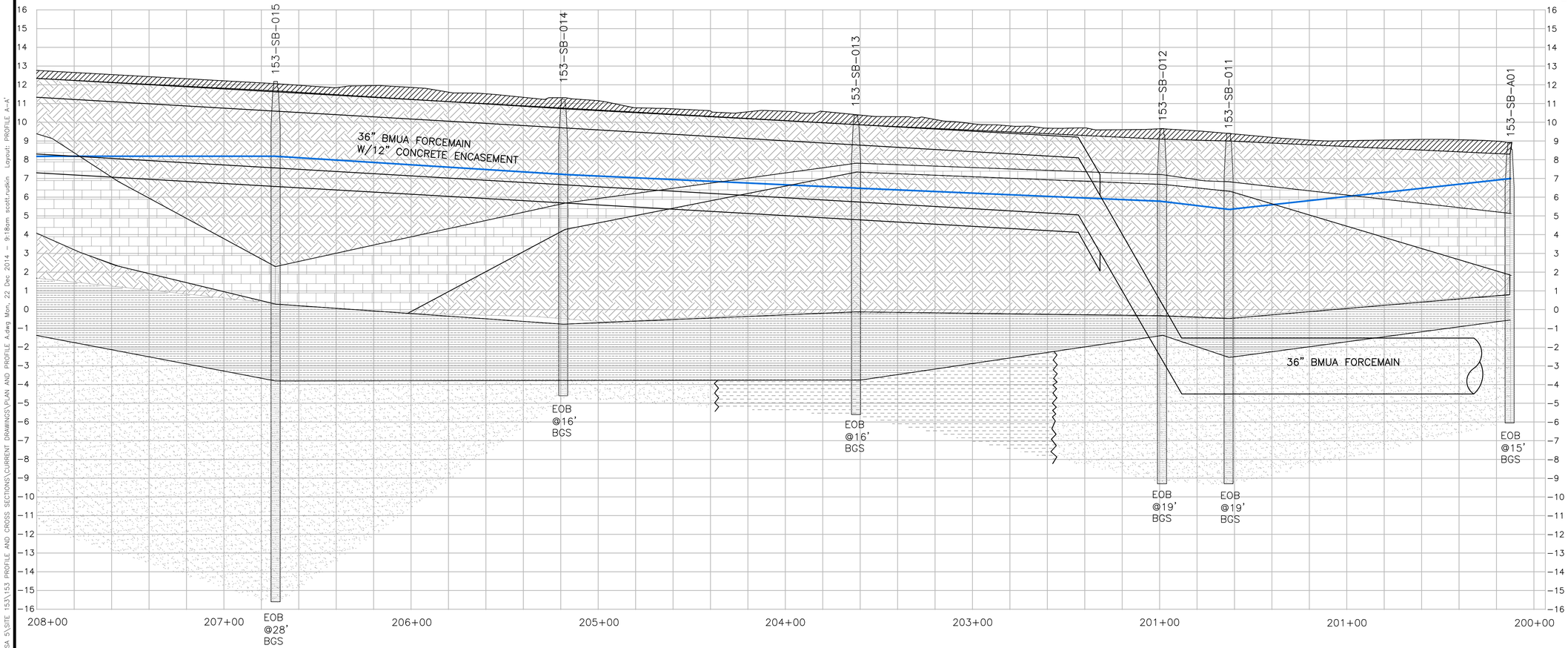
EXISTING GRADE (AT SECTION CENTER LINE)

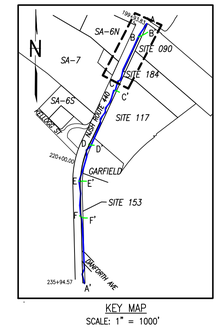
WATER TABLE

SOIL BORING SAMPLE LOCATION

232+00 CENTERLINE AND STATIONING

CROSS SECTION LINE





KEY MAP
SCALE: 1" = 1000'

SCALE: HORIZONTAL
0 15 30 60
SCALE IN FEET

VERTICAL
0 1.5 3 6
SCALE IN FEET

BASE MAP FROM CMX DRAWING TITLED "TOPOGRAPHICAL SURVEY STUDY AREA-5 SITE 153", BLOCK 1289.5 – LOT E1. DATED 6/26/09

HORIZONTAL DATUM IS NAD-1983 AND VERTICAL DATUM IS NGVD-1929. BASED ON GPS OBSERVATION BY CMX. REFERENCE MONUMENT FOR BENCHMARK – NGS MONUMENT KV0272.

REV.	DATE	STATUS	PRPD BY	CHKD BY
A	03/13/12	CHANGE TITLE BLOCK, MINOR REVISIONS	STR	MEB

AMEC PROJECT No. 3480110271
DRAWING: PLAN AND PROFILE A

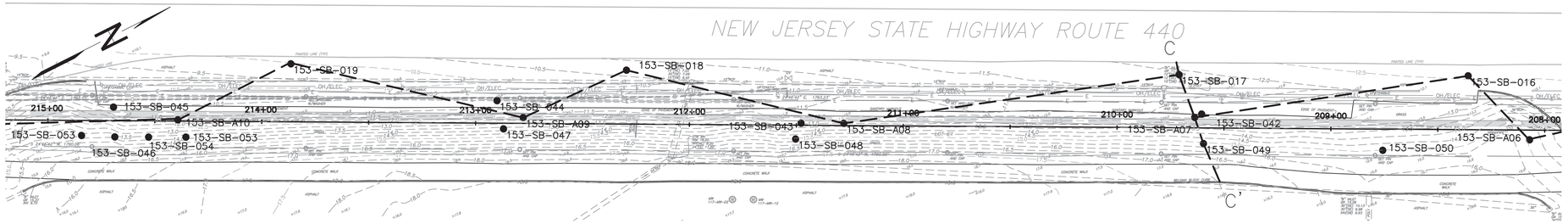
PREPARED/DATE: STR 11/23/10

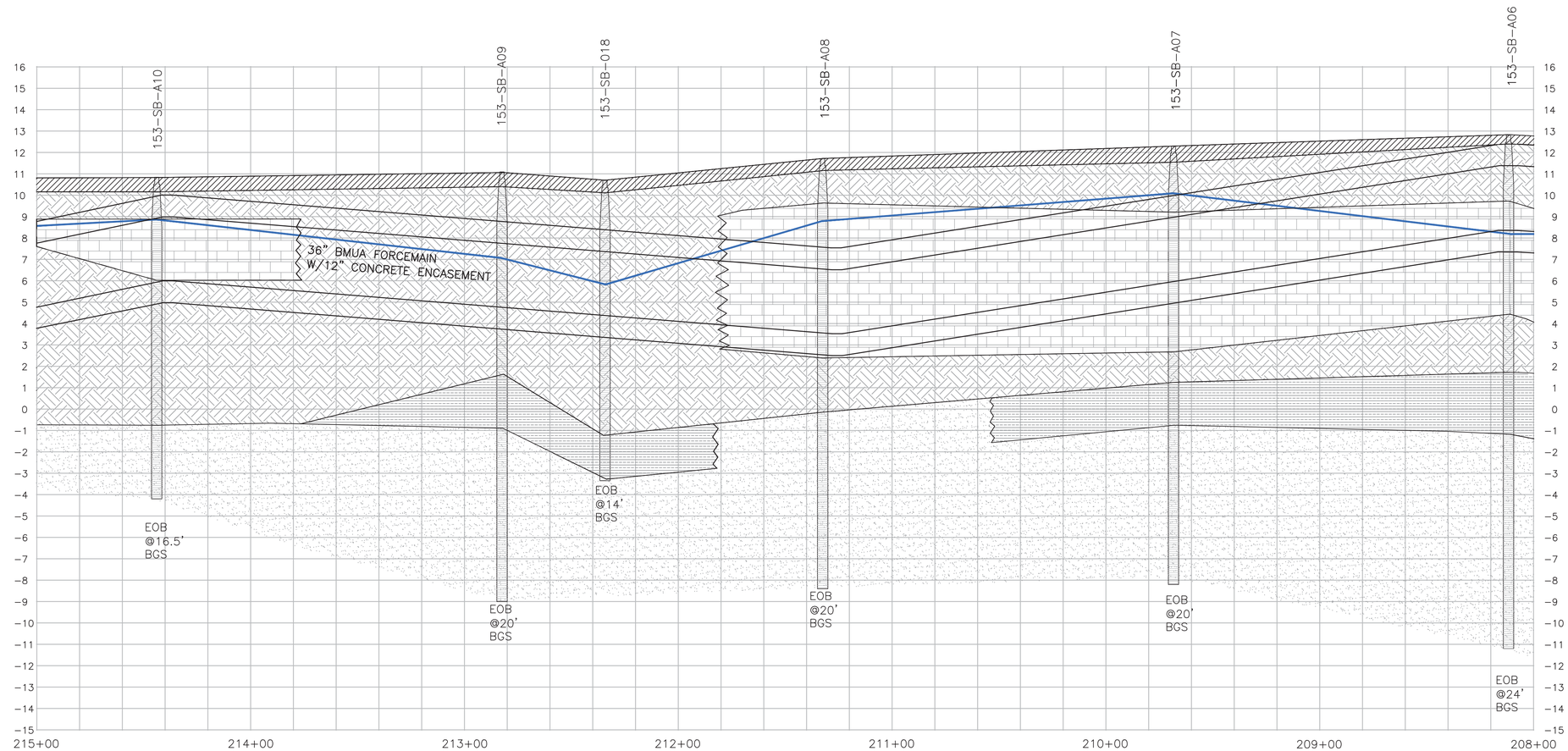
CHECKED/DATE: JB 12/10/14

ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

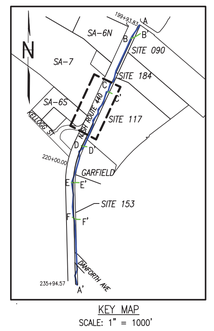
FIGURE 3A
PROFILE A-A'
STA. 199+93.83 TO 208+00
SA-5 SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY

P:\CADD\HONEYWELL\JERSEY CITY\SA 5\SITE 153\153 PROFILE AND CROSS SECTIONS\CURRENT DRAWINGS\PLAN AND PROFILE A.dwg Mon, 22 Dec 2014 - 9:18am scott.roplin Layout: PROFILE A-A'





- ASPHALT
- FILL
- FILL MIXED WITH COPR MATERIAL
- MEADOW MAT (INCLUDING PEAT AND/OR ORGANIC SILTS/CLAYS)
- SILT
- SAND
- EXISTING GRADE (AT SECTION CENTER LINE)
- WATER TABLE
- SOIL BORING SAMPLE LOCATION
- 232+00 CENTERLINE AND STATIONING
- CROSS SECTION LINE



KEY MAP
SCALE: 1" = 1000'

SCALE:
HORIZONTAL

0 15 30 60
SCALE IN FEET

VERTICAL

0 1.5 3 6
SCALE IN FEET

BASE MAP FROM CMX DRAWING TITLED "TOPOGRAPHICAL SURVEY STUDY AREA–5 SITE 153", BLOCK 1289.5 – LOT E1. DATED 6/26/09

HORIZONTAL DATUM IS NAD–1983 AND VERTICAL DATUM IS NGVD–1929. BASED ON GPS OBSERVATION BY CMX. REFERENCE MONUMENT FOR BENCHMARK – NGS MONUMENT KV0272.

REV.	DATE	STATUS	PRPD BY	CHKD BY
A	03/13/12	CHANGE TITLE BLOCK, MINOR REVISIONS	STR	MEB

AMEC PROJECT No. 3480110271
DRAWING: PLAN AND PROFILE A

PREPARED/DATE: STR 11/23/10

CHECKED/DATE: JB 12/10/14

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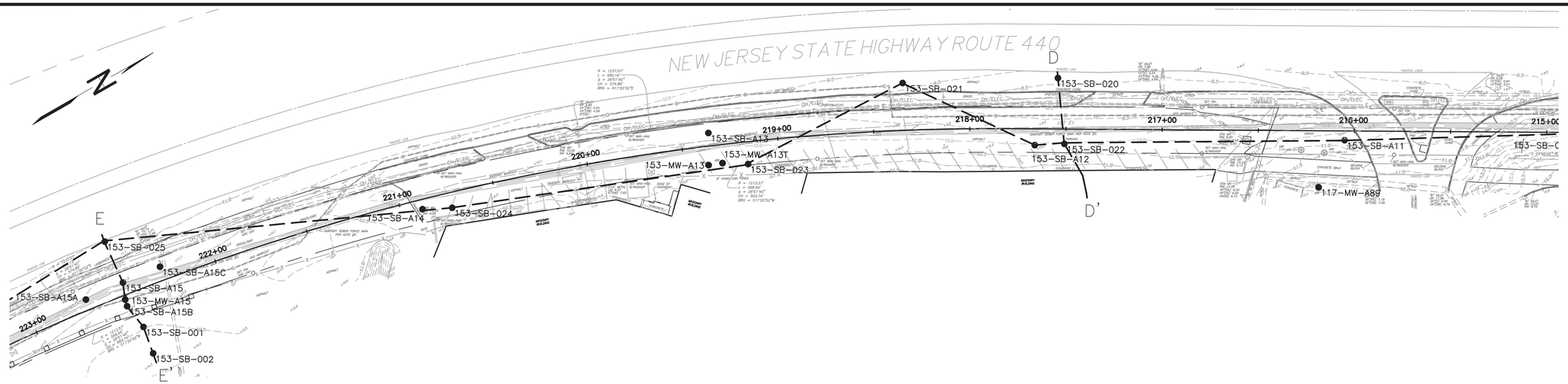
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

FIGURE 3B
PROFILE A-A''
STA. 208+00.00 TO 215+00.00
SA-5 SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY

P:\CADD\HONEYWELL\JERSEY CITY\SA 5\SITE 153\153 PROFILE AND CROSS SECTIONS\CURRENT DRAWINGS\PLAN AND PROFILE A.dwg Mon, 22 Dec 2014 - 9:19am scott.radke Layout: SECTION B-B'



ASPHALT

FILL

FILL MIXED WITH COPR MATERIAL

MEADOW MAT (INCLUDING PEAT AND/OR ORGANIC SILTS/CLAYS)

SILT

SAND

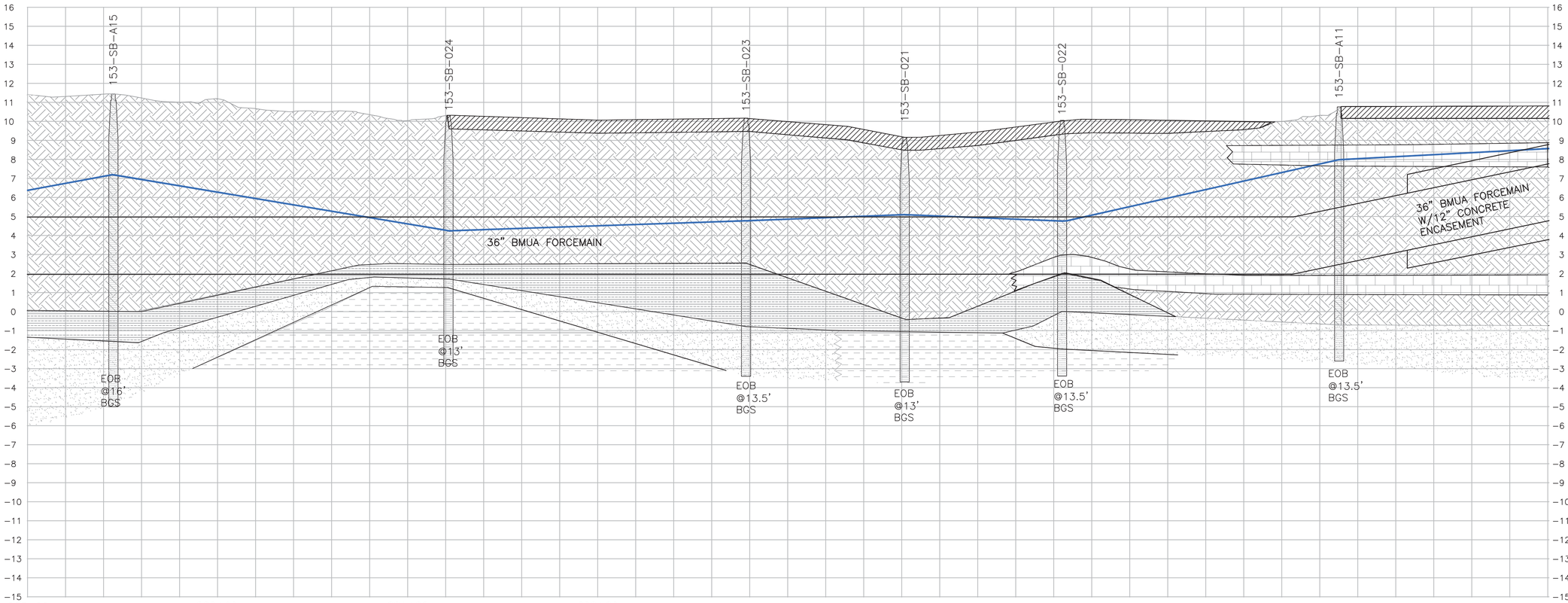
EXISTING GRADE (AT SECTION CENTER LINE)

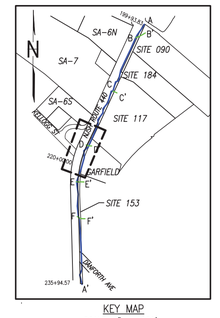
WATER TABLE

SOIL BORING SAMPLE LOCATION

232+00 CENTERLINE AND STATIONING

CROSS SECTION LINE





KEY MAP
SCALE: 1" = 1000'

SCALE:
HORIZONTAL
0 15 30 60
SCALE IN FEET

VERTICAL
0 1.5 3 6
SCALE IN FEET

BASE MAP FROM CMX DRAWING TITLED "TOPOGRAPHICAL SURVEY STUDY AREA–5 SITE 153", BLOCK 1289.5 – LOT E1. DATED 6/26/09

HORIZONTAL DATUM IS NAD–1983 AND VERTICAL DATUM IS NGVD–1929. BASED ON GPS OBSERVATION BY CMX. REFERENCE MONUMENT FOR BENCHMARK – NGS MONUMENT KV0272.

REV.	DATE	STATUS	PRPD BY	CHKD BY
A	03/13/12	CHANGE TITLE BLOCK, MINOR REVISIONS	STR	MEB

AMEC PROJECT No. 3480110271
DRAWING: PLAN AND PROFILE A

PREPARED/DATE: STR 11/23/10

CHECKED/DATE: JB 12/10/14

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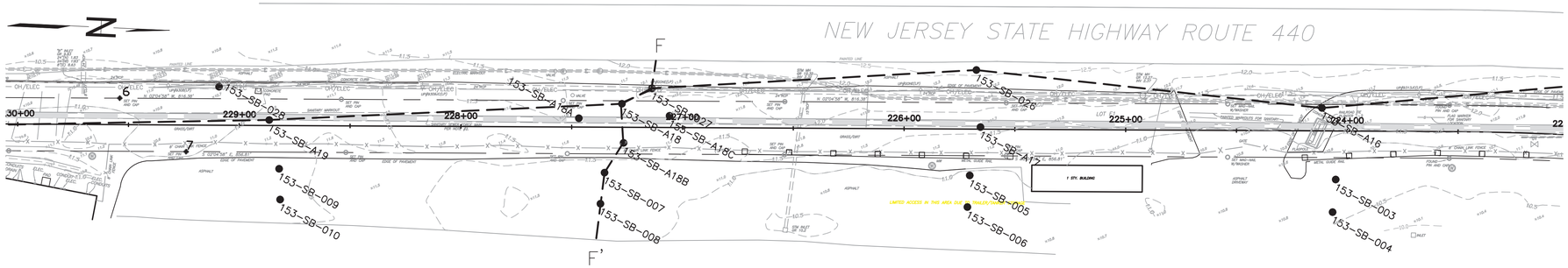
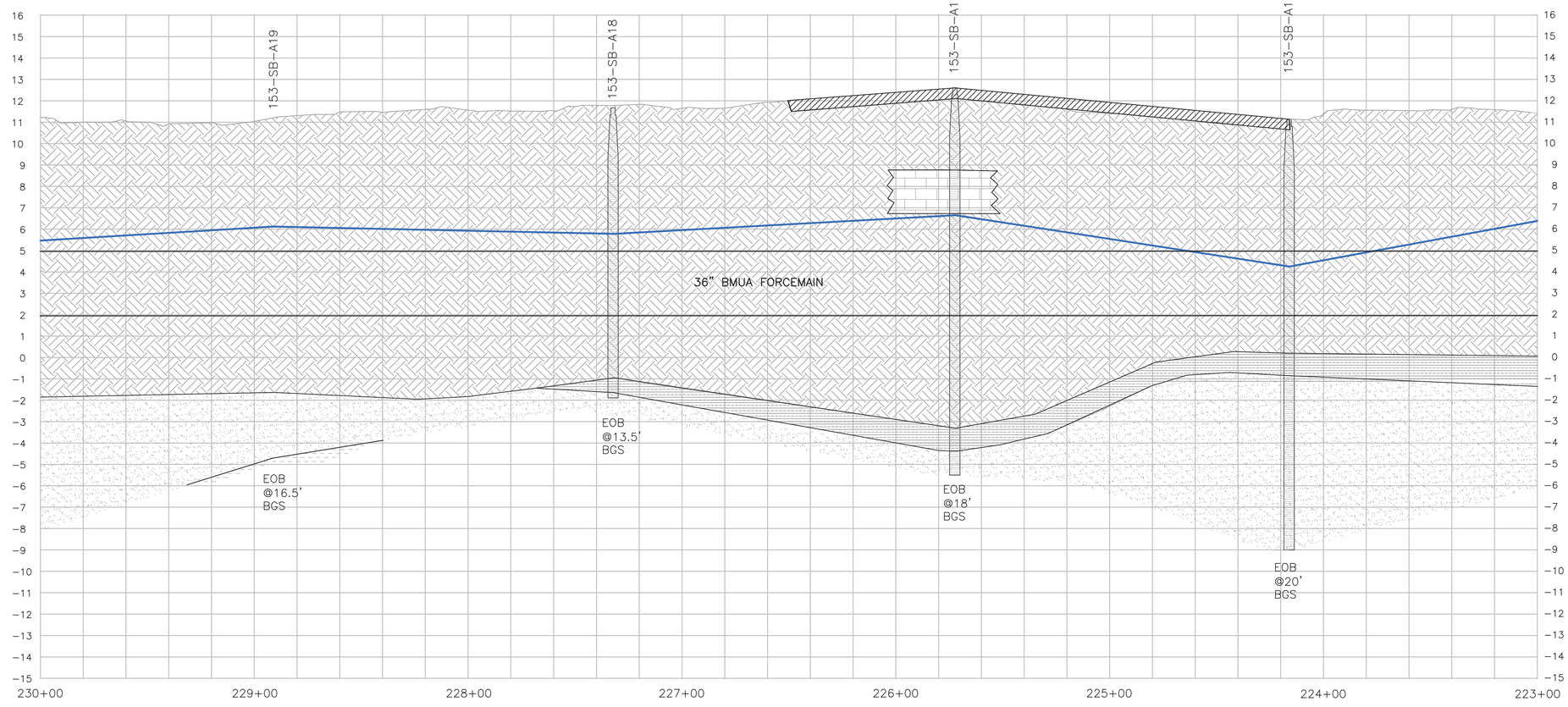
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

FIGURE 3C
PROFILE A-A"
STA. 215+00.00 TO 223+00.00
SA-5 SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY

P:\CADD\HONEYWELL\JERSEY CITY\SA 5\SITE 153\153 PROFILE AND CROSS SECTIONS\CURRENT DRAWINGS\PLAN AND PROFILE A.dwg Mon, 22 Dec 2014 – 9:10am esolt.rodkin Layout: PROFILE A-A" C





ASPHALT

FILL

FILL MIXED WITH COPR MATERIAL

MEADOW MAT (INCLUDING PEAT AND/OR ORGANIC SILTS/CLAYS)

SILT

SAND

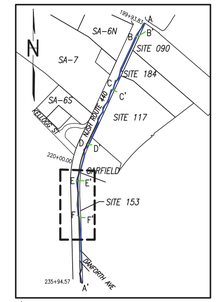
EXISTING GRADE (AT SECTION CENTER LINE)

WATER TABLE

SOIL BORING SAMPLE LOCATION

232+00 CENTERLINE AND STATIONING

CROSS SECTION LINE



KEY MAP
SCALE: 1" = 1000'

SCALE:
HORIZONTAL
0 15 30 60
SCALE IN FEET

VERTICAL
0 1.5 3 6
SCALE IN FEET

BASE MAP FROM CMX DRAWING TITLED "TOPOGRAPHICAL SURVEY STUDY AREA–5 SITE 153", BLOCK 1289.5 – LOT E1. DATED 6/26/09

HORIZONTAL DATUM IS NAD–1983 AND VERTICAL DATUM IS NGVD–1929. BASED ON GPS OBSERVATION BY CMX. REFERENCE MONUMENT FOR BENCHMARK – NGS MONUMENT KV0272.

REV.	DATE	STATUS	PRPD BY	CHKD BY
A	03/13/12	CHANGE TITLE BLOCK, MINOR REVISIONS	STR	MEB

MACTEC PROJECT No. 3480110271
DRAWING: PLAN AND PROFILE A

PREPARED/DATE: STR 11/23/10

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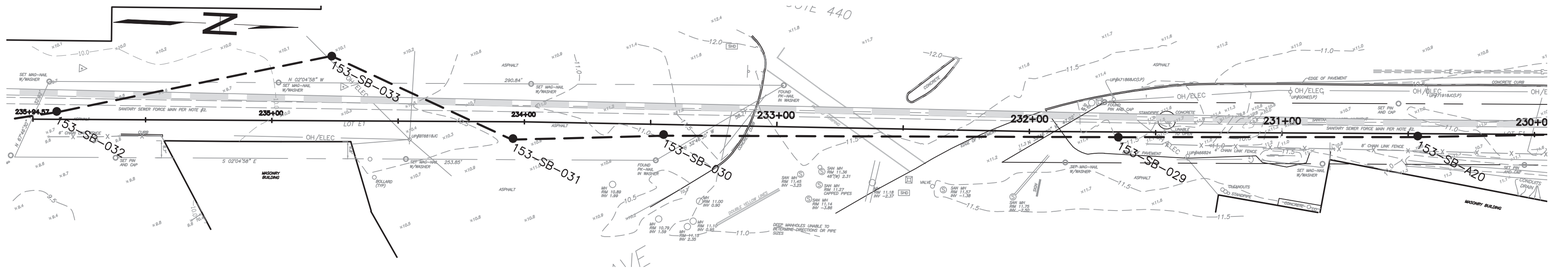
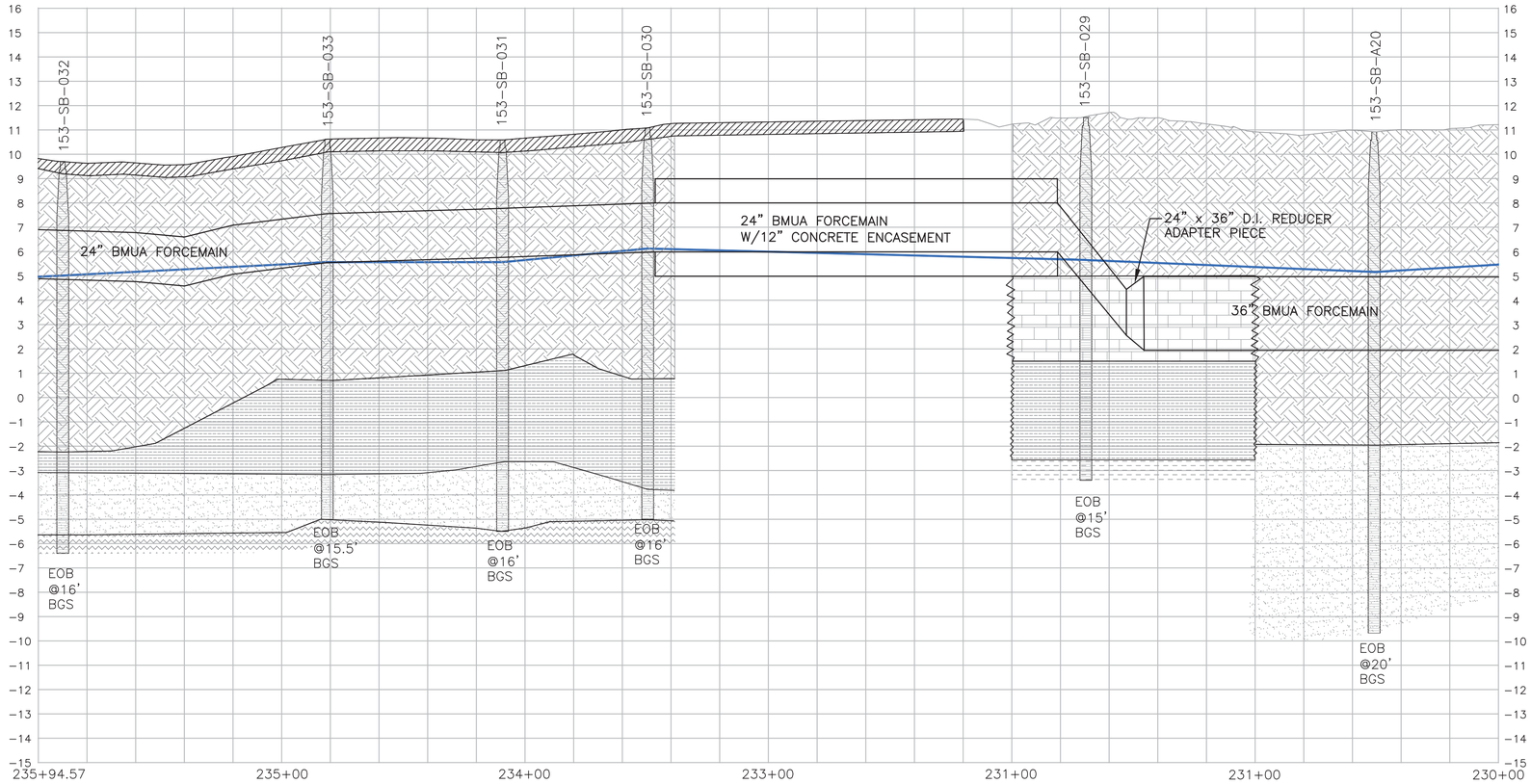
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

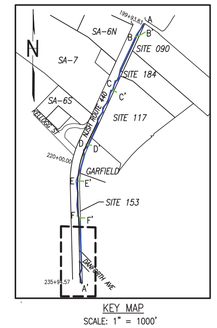
FIGURE 3D
PROFILE A-A"
STA. 223+00.00 TO 230+00.00
SA-5 SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY

P:\CAD\JVONEWELL\JERSEY CITY\SA 5\SITE 153\153 PROFILE AND CROSS SECTIONS\CURRENT DRAWINGS\PLAN AND PROFILE A.dwg Mon, 22 Dec 2014 - 9:19am scott.mallin Layout: PROFILE A-A' D





- ASPHALT
- FILL
- FILL MIXED WITH COPR MATERIAL
- MEADOW MAT (INCLUDING PEAT AND/OR ORGANIC SILTS/CLAYS)
- SILT
- SAND
- EXISTING GRADE (AT SECTION CENTER LINE)
- WATER TABLE
- SOIL BORING SAMPLE LOCATION
- 232+00 CENTERLINE AND STATIONING
- CROSS SECTION LINE



KEY MAP
SCALE: 1" = 1000'

SCALE:
HORIZONTAL
0 15 30 60
SCALE IN FEET

VERTICAL
0 1.5 3 6
SCALE IN FEET

BASE MAP FROM CMX DRAWING TITLED "TOPOGRAPHICAL SURVEY STUDY AREA–5 SITE 153", BLOCK 1289.5 – LOT E1. DATED 6/26/09

HORIZONTAL DATUM IS NAD–1983 AND VERTICAL DATUM IS NGVD–1929. BASED ON GPS OBSERVATION BY CMX. REFERENCE MONUMENT FOR BENCHMARK – NGS MONUMENT KV0272.

REV.	DATE	STATUS	PRPD BY	CHKD BY
A	03/13/12	CHANGE TITLE BLOCK, MINOR REVISIONS	STR	MEB

AMEC PROJECT No. 3480110271
DRAWING: PLAN AND PROFILE A

PREPARED/DATE: STR 11/23/10
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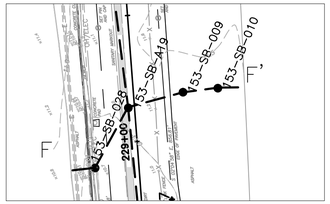
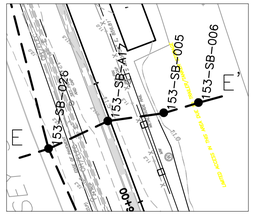
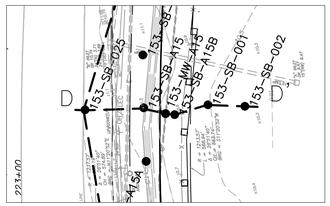
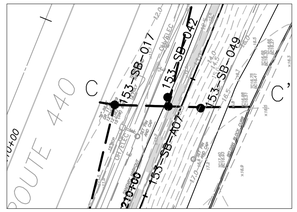
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

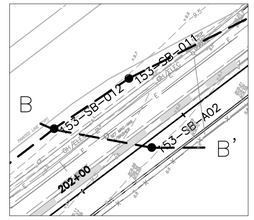
FIGURE 3E
PROFILE A-A'
STA. 230+00.00 TO 235+94.57
SA-5 SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY











ASPHALT

FILL

FILL MIXED WITH COPR MATERIAL

MEADOW MAT (INCLUDING PEAT AND/OR ORGANIC SILTS/CLAYS)

SILT

SAND

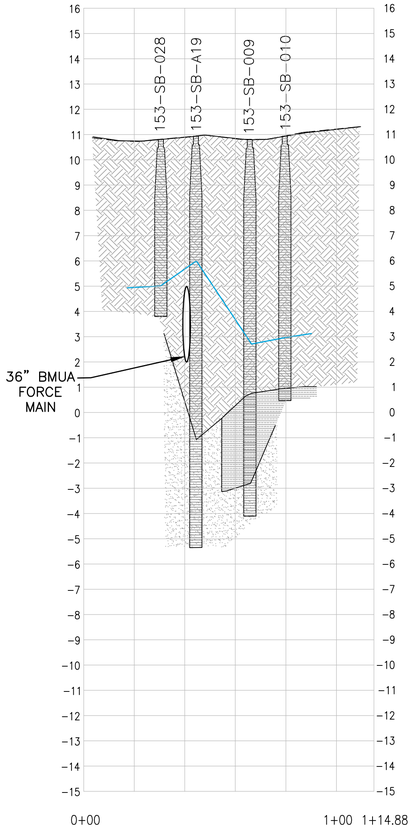
EXISTING GRADE (AT SECTION CENTER LINE)

WATER TABLE

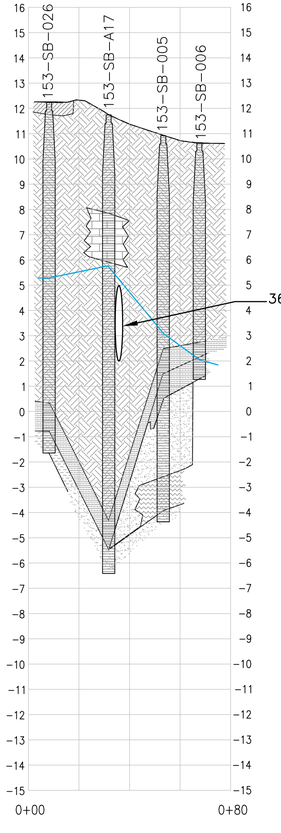
SOIL BORING SAMPLE LOCATION

232+00 CENTERLINE AND STATIONING

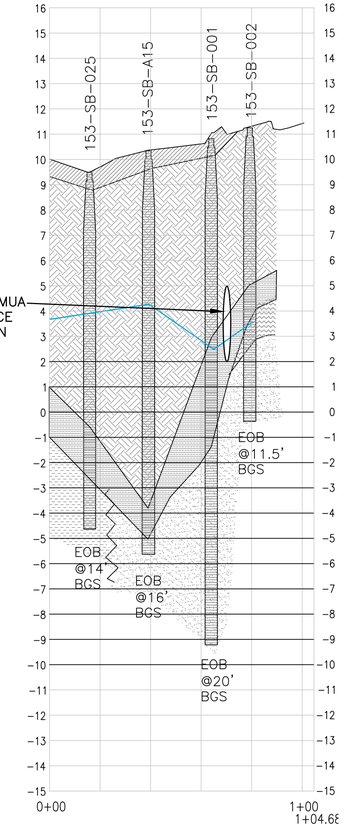
CROSS SECTION LINE



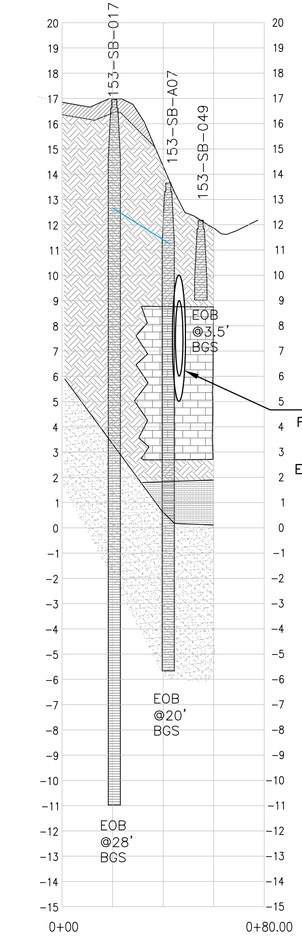
SECTION F–F'



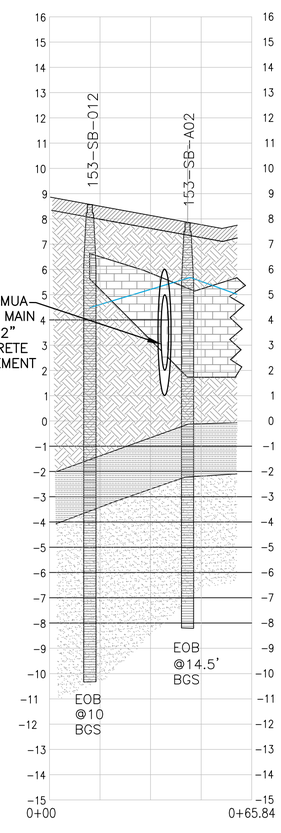
SECTION E–E'



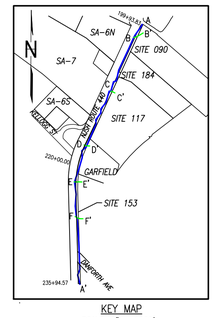
SECTION D–D'



SECTION C–C'



SECTION B–B'



KEY MAP
SCALE: 1" = 1000'

SCALE: HORIZONTAL
0 15 30 60
SCALE IN FEET

VERTICAL
0 1.5 3 6
SCALE IN FEET

BASE MAP FROM CMX DRAWING TITLED "TOPOGRAPHICAL SURVEY STUDY AREA–5 SITE 153", BLOCK 1289.5 – LOT E1. DATED 6/26/09

HORIZONTAL DATUM IS NAD–1983 AND VERTICAL DATUM IS NGVD–1929. BASED ON GPS OBSERVATION BY CMX. REFERENCE MONUMENT FOR BENCHMARK – NGS MONUMENT KV0272.

REV.	DATE	STATUS	PRPD BY	CHKD BY
A	03/13/12	CHANGE TITLE BLOCK, MINOR REVISIONS	STR	MEB

AMEC PROJECT No. 3480110271
DRAWING: SECTIONS

PREPARED/DATE: STR 11/23/10

CHECKED/DATE: JB 12/10/14

ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

FIGURE 3F
CROSS SECTIONS B-B', C-C', D-D', E-E' & F-F'
SA-5 SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY

P:\CADD\HONEYWELL\JERSEY CITY\SA 5\SITE 153\153 PROFILE AND CROSS SECTIONS\CURRENT DRAWINGS\SECTIONS.dwg Mon, 22 Dec 2014 - 9:20am scott.rudkin Layout: CROSS SECTIONS

153-SB-032		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	0.91	57.8 J
0204	3.2	34.8 J
0406	3.1	19.1
0608	1.4 U	9.2
0810	1.2 U	8.7
1012	1.5 U	190
1214	0.98 U	16.2
1416	0.93 U	13.5

153-SB-064		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0810	5 U	80.7 J
1012	3.8 U	1050 J

153-SB-033		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	1.7 J	16.2
0204	2.2 J	53
0406	2.1 J	18.6
0608	1.2 J	9.6
0810	**97.2 J**	5880
1012	1.4 UJ	773
1012 DUP	**74.7 J**	5030
1214	2 J	5330
1416	0.95 UJ	6.7

153-SB-031		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	7.9	105 J
0002 DUP	7.5	11.8 J
0204	5	68.5 J
0406	0.81	30.9 J
0608	0.48 U	14.3 J
0810	0.49 U	16.5 J
1012	0.75 U	229 J
1214	0.87 U	85.1 J
1416	0.5	13.5 J
1416 DUP	1.5	26 J

153-SB-030		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	1.5	18.5 J
0204	0.9	15.6 J
0406	0.47 U	12.1 J
0608	0.75	92.5 J
0810	0.51 U	16.5 J
1012	1.9	106 J
1214	0.76 U	150 J
1416	1.2	9.8 J

153-SB-A20		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~13.3 J~~	~~70.7 J~~
0406	2.3 UJ	10.5 J
0810	14.2 J	67.4 J
1214	**92.7 J**	265 J
1618	2.4 UJ	5.9 J
1820	2.4 U	9.8 J

153-SB-028		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	1.1 J	13.4 J
0204	0.99 UJ	65.7 J

153-SB-A19		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~2.3 UJ~~	~~12.1 J~~
0204	**21.6 J**	208 J
0406	4.8 J	41.5 J
0810	8.6 J	181 J
1214	3.1 J	15.2 J
1214 DUP	2.5 U	28.8 J

153-SB-A18A		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~44.9~~	~~421 J~~

153-SB-A18		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~449 J~~	~~1480 J~~
0406	**42.2 J**	291 J
0810	**77.2 J**	464 J
1214	3.7 J	18.8 J

153-SB-027		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	2.1	24.9 J
0204	3.3	14 J
0406	4.2	49.9 J
0608	0.53 U	101 J
0810	9.3	310
1012	5.2 J	22100
1214	3.9 J	12300

153-SB-A18B		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~446~~	~~6620 J~~

153-SB-A18C		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~458~~	~~2550 J~~

153-SB-068		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	4.1 J	65.6
0204	0.59 UJ	16.3
0406	0.8 J	20.4
0608	0.61 U	19.8
0810	0.71 U	21.4
1012	10.7 J	24200
1214	0.7 UJ	41.5

153-SB-007		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	1.8 U	22.4 J
0204	4.5	58.4 J
0406	2 U	83 J
0608	11.9	751 J
0810	2.1 U	1850
1012	19.6	35.4
1012 DUP	15 U	281

153-SB-026		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	2.3 J	29.5 J
0002 DUP	0.92 UJ	26.7 J
0204	1.1 J	9.9 J
0406	1 UJ	8.8 J
0608	**33 J**	918 J
0810	**31.6 J**	1420 J
1012	**39.9 J**	1530 J

153-SB-005		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	1.9 U	36.6 J
0204	3	48.1 J
0406	2.5 U	149 J
0608	2.3 U	37.9 J
0810	5.4 U	37800 J
1012	2.3 U	9.8 J

153-SB-A16		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~5.7~~	~~56.2 J~~
0406	2.3 UJ	14.3 J
0406 DUP	2.3 UJ	24.6 J
0810	5 UJ	28200 J
1214	3.5 UJ	190 J
1416	2.3 UJ	19.2 J
1618	2.5 UJ	17.6 J
1820	2.3 UJ	10.9 J

153-SB-A15A		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~948~~	~~12100 J~~

153-SB-003		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	1.9 U	92.6 J
0204	5.9	18.8 J
0406	1.8 U	37.3 J
0608	2.1 U	28.3 J
0810	1.9 U	15.4 J

153-SB-009		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	1.8 U	23.5
0204	1.9 U	382
0406	1.1	122
0608	2.1 U	303
0810	4.1 U	97.4
0810 DUP	4.1 U	787
1012	6.3 U	147
1214	15 U	8.3

153-SB-008		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	1.6 U	49.8
0204	2.1 U	51
0406	2.1 U	23.3
0608	2.3 U	78.4
0810	2.3 U	408
1012	14 U	24.7

153-SB-A17		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~21.1 J~~	~~204 J~~
0204	**44.1 J**	767 J
0406	3.1 J	9 J
0406 DUP	2.6 J	6.8 J
0810	9.4 J	103 J
1618	2.6 J	17.1 J

153-SB-A15		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~685 J~~	~~6600 J~~
0002 DUP	**29.5**	1090
0204	14.9 J	154 J
0406	3.6	29.1 J
0810	**315**	5220 J
1214	5.4 UJ	5100 J
1416	2.3 UJ	21.5 J

153-SB-025		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	1.5	20.1 J
0204	0.45 U	9.4 J
0406	0.66 J	11.6 J
0608	**104**	1090
0810	1.2	44.3
1012	**92.5**	1070

153-SB-001		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	1.7 U	23 J
0204	2.1 U	13.8 J
0406	2 U	20.5 J
0608	2.2 U	36.6 J
0810	12.5	207 J

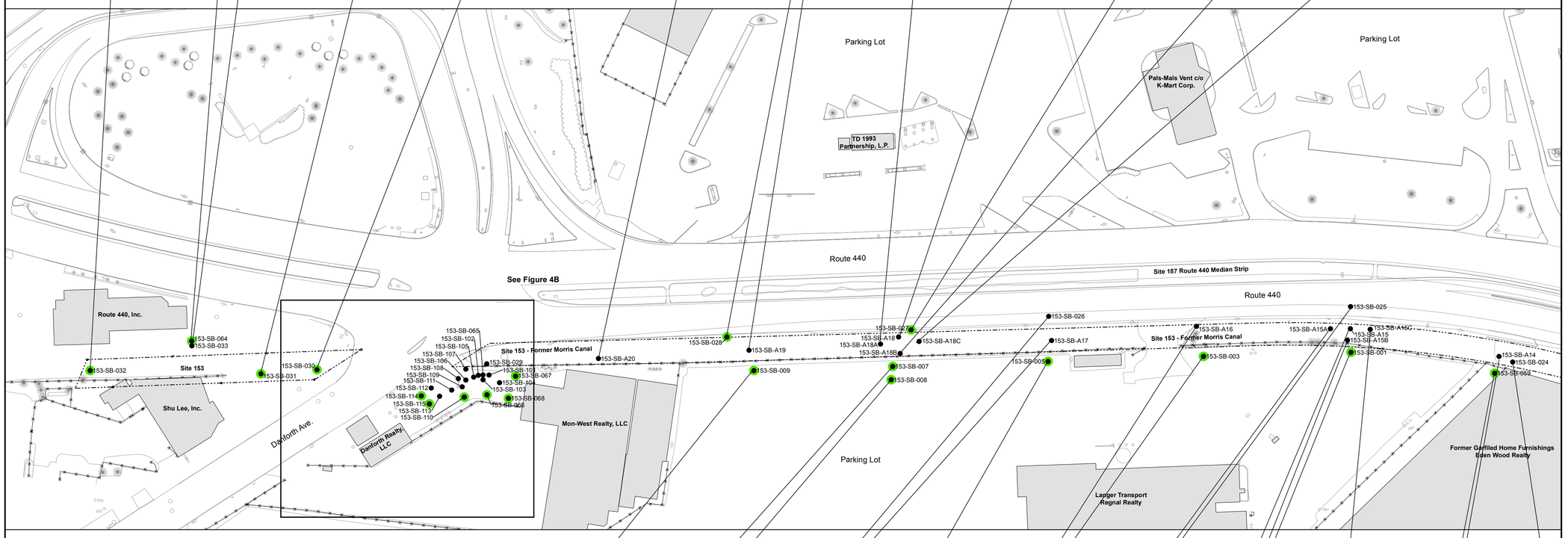
153-SB-A15B		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~644~~	~~5140 J~~

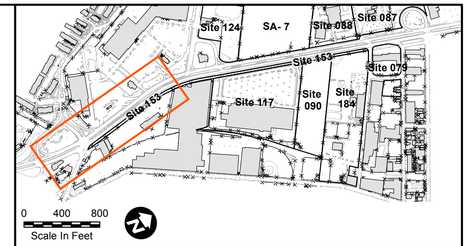
153-SB-059		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	14.7	172 J
0204	2.7	24.1 J
0406	6.6 J	59.7 J
0608	17.1 J	91.1 J
0810	1.1 J	10.2 J
1012	0.48 J	11 J
1214	0.78	23.4 J

153-SB-A15C		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~31.8~~	~~435 J~~

153-SB-024		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0406	**84.3**	2440 J
0608	12.7	69.6 J
0810	2.2 U	1170 J
1012	1.1	17.3 J

153-SB-A14		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~18.1 J~~	~~154 J~~
0810	**116 J**	296 J
1214	2.3 UJ	8.3 J
1416	2.5 UJ	10.7 J





Legend

- Soil Boring Location
- Soil Boring Location < 20 mg/kg Hexavalent Chromium
- Site Boundary
- Fenceline
- Buildings

153-SB-A18B		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~446~~	~~6620 J~~

Soil represented by sample result was excavated during previous interim remedial measures.

Notes:

Figures 4A – 4D include soil sample results from the 1997-1999 RI (TetraTech, 1999) and addition RI sampling sampling during 2009-2011.

Bold and shaded sample result exceeds the NJDEP soil criteria for hexavalent chromium of 20 mg/kg.

U = Compound was not detected.

J = Data indicates the presence of a compound that meets the identification criteria. The concentration given is an approximate value.

DUP = Duplicate soil sample.

NA = Not Analyzed.

mg/kg = milligrams per kilogram.

60 30 0 60 120
Scale In Feet

REV.	DATE	STATUS	Prepared By	Checked By

Amec Project No.
3480110271

Prepared/Date
WSL 12/10/14

Checked/Date
AG 12/10/14

amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

Figure 4A
Soil Sample Results - Total and Hexavalent Chromium
Site 153 South Lower Segment
Study Area 5
Site 153 - Former Morris Canal
Jersey City, New Jersey

153-SB-112		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
1-1.5	6.8	89.8 J
2-2.5	**27.6**	349 J
2-2.5 DP	17.6	268 J
4-4.5	**137**	2880 J
7.5-8	**250 J**	1140 J
8-8.5	**24.4**	1420 J
10.5-11	**55.6**	496 J

153-SB-113		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
1.5-2	2.9	24.4 J
2.5-3	0.56 J	6.5 J
4.5-5	1 J	14 J
4.5-5 DP	1 J	23.7 J
6.5-7	**68.3**	201 J
8.5-9	7.4	503 J
10-10.5	7.7	26.3 J

153-SB-114		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
6.5-7	11.5	38.3 J

153-SB-115		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
2.5-3	2.7	22.8 J
4-4.5	7.8	69.4 J
6.5-7	8.1	17.4 J
8.5-9	3.4 U	36.4 J

153-SB-106		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0.5-1	**322**	NA
1-1.5	**146**	NA

153-SB-109		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0.5-1	**248**	NA
1-1.5	**576**	NA
2-2.5	12.3	NA
4-4.5	**464**	NA

153-SB-110		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0.5-1	6.9	NA
1-1.5	6.6	NA
2-2.5	1.7	NA
4-4.5	3	NA
6-6.5	3.1	NA

153-SB-111		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0.5-1	**20.8**	NA
1-1.5	**125**	NA
2-2.5	**106**	NA
4-4.5	**227**	NA
6-6.5	**126**	NA

153-SB-108		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0.5-1	**48.9**	NA
1-1.5	**7000**	NA

153-SB-107		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0.5-1	**163**	NA
1-1.5	**169**	NA
2-2.5	**24**	NA
4-4.5	**122**	NA
6-6.5	7.9	NA

153-SB-029		
Depth (feet)	Hexavalent (mg/kg)	Chromium (mg/kg)
0002	10 J	485 J
0204	16.2 J	160 J
0406	**117 J**	5100 J
0608	**1730 J**	12900 J
0810	**7860**	20100 J
1012	1 J	1060 J
1214	1.6 UJ	41.8 J

153-SB-101		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
2-2.5	**22**	NA
4-4.5	0.88	NA
6-6.5	2.5	NA
8-8.5	0.52	NA

153-SB-067		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	0.46 U	13.3
0204	3.2	17.5
0406	0.86 U	10.1
0608	0.59	10.1
0810	0.97 U	12.4
1012	0.95 UJ	11700
1214	4.1 U	39.8

153-SB-104		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
1-1.5	0.79	NA
3-3.5	0.67	NA
5-5.5	0.92	NA
7-7.5	0.54	NA
9-9.5	5 U	NA
11-11.5	5.9	NA
12-12.5	7.3 U	NA

153-SB-068		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	4.1 J	65.6
0204	0.59 UJ	16.3
0406	0.8 J	20.4
0608	0.61 U	19.8
0810	0.71 U	21.4
1012	10.7 J	24200
1214	0.7 UJ	41.5

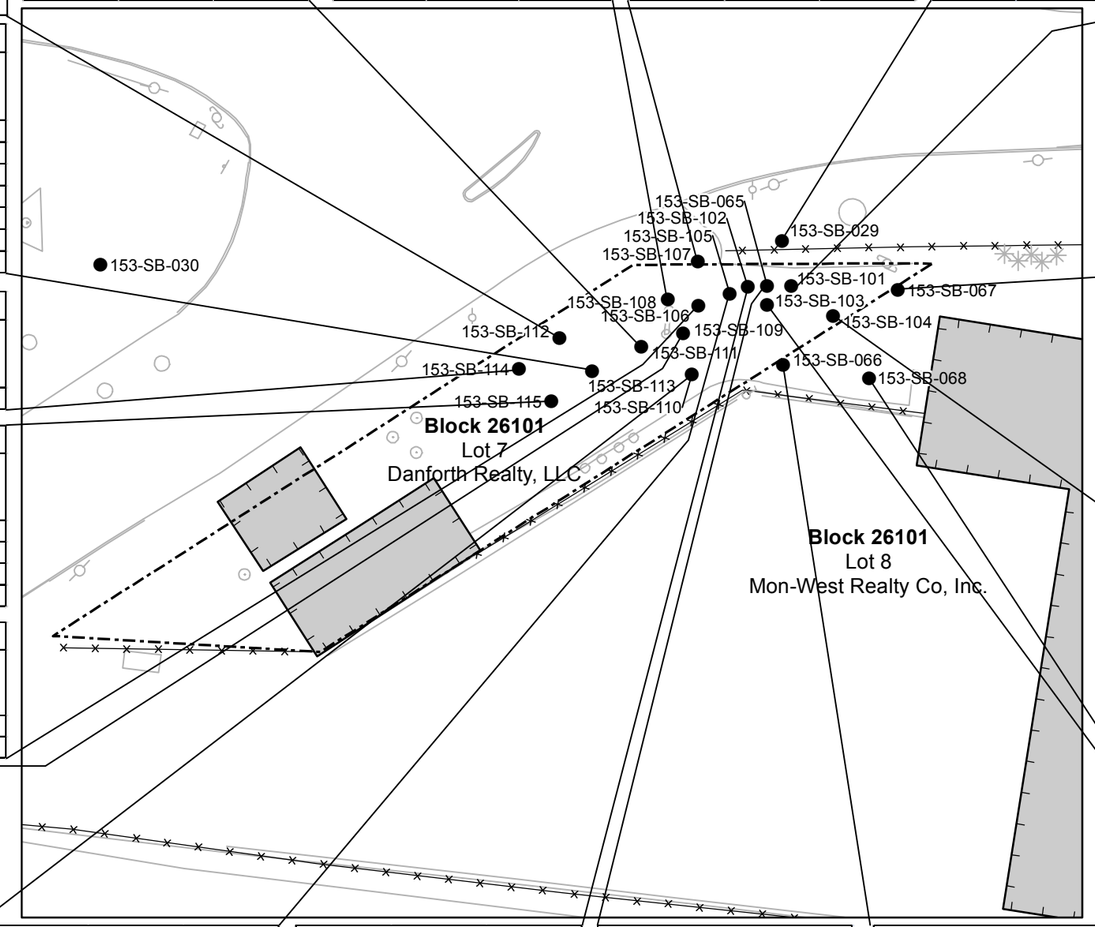
153-SB-103		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
2-2.5	1.2	NA
4-4.5	0.89	NA
6-6.5	0.68	NA
8-8.5	0.73 U	NA

153-SB-066		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	2 J	17.2
0204	0.58 U	18.7
0406	0.64 UJ	19.9
0608	2.5	19.3
0810	0.91 UJ	43.4
1012	3.2 J	441

153-SB-065		
Depth (feet)	Hexavalent (mg/kg)	Chromium (mg/kg)
0204	**20.5**	435
0406	**24**	488
0608	**58**	699
0810	2	579
1012	0.87 UJ	8730

153-SB-102		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
2-2.5	**109**	NA
4-4.5	**68.5**	NA
4-4.5 DP	**69.5**	NA
6-6.5	**160**	NA
8-8.5	0.63 U	NA

153-SB-105		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0.5-1	16.1	NA
1-1.5	2.9	NA
2-2.5	5.8	NA
4-4.5	14.1	NA
6-6.5	**112**	NA



Legend

- Soil Boring Location
- Danforth Realty Property Boundary
- Existing Building

153-SB-A18B		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	**445**	6620 J

Soil represented by sample result was excavated during previous interim remedial measures.

Notes:

Figures 4A – 4D include soil sample results from the 1997-1999 RI (TetraTech, 1999) and addition RI sampling sampling during 2009-2011.

Bold and shaded sample result exceeds the NJDEP soil criteria for hexavalent chromium of 20 mg/kg.

U = Compound was not detected.

J = Data indicates the presence of a compound that meets the identification criteria. The concentration given is an approximate value.

DUP = Duplicate soil sample.

NA = Not Analyzed.

mg/kg = milligrams per kilogram.

Map Reference:

Danforth Realty property boundary from Maser Consulting, P.A. electronic AutoCAD survey file, received 1/13/13.

40 0 40 80

Scale In Feet

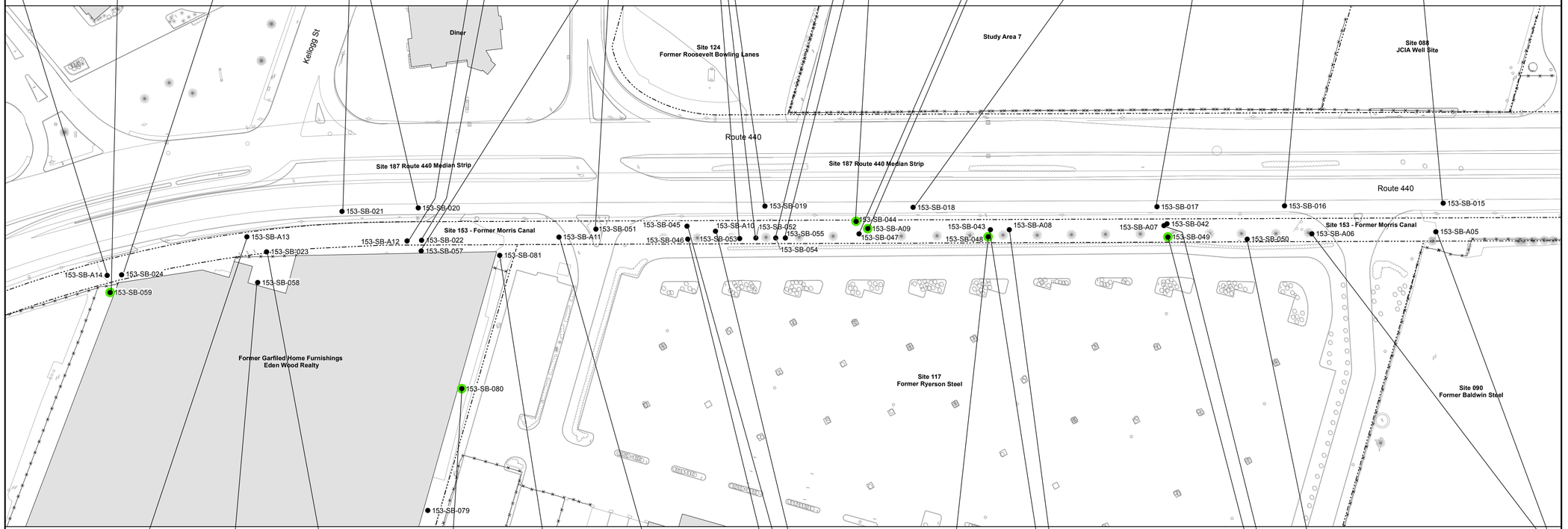
Amec Project Number:
3480130371

Prepared/Date:
WSL 10/14/2014

Checked/Date:
AG 10/14/2014

ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

Figure 4B
Soil Boring Results - Total and Hexavalent Chromium
Block 26101, Lot 7 & 8
Site 153 Former Morris Canal
Jersey City, New Jersey



153-SB-A14		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~18.1~~	~~154~~
0810	**116 J**	296 J
1214	2.3 UJ	8.3 J
1416	2.5 UJ	10.7 J

153-SB-A13		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~33.9 J~~	~~433 J~~
0204	**54.5 J**	1180 J
0406	**34.4 J**	198 J
0810	**232 J**	4440 J
1416	3.7 J	9.5 J
1416 DUP	6.6	17.7

153-SB-059		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	14.7	172 J
0204	2.7	24.1 J
0406	6.6 J	59.7 J
0608	17.1 J	91.1 J
0810	1.1 J	10.2 J
1012	0.48 J	11 J
1214	0.78	23.4 J

153-SB-058		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	**22.7 J**	501 J
0204	13.7	109 J
0406	**601**	6950 J
0608	0.54 U	33 J
0810	0.93	10.4 J
1012	1.2	16.9 J

153-SB-024		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0406	**84.3**	2440 J
0608	12.7	69.6 J
0810	2.2 U	1170 J
1012	1.1	17.3 J

153-SB-023		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0406	**269**	13300 J
0608	**435**	10600 J
0810	5.2	33300 J
1012	1.9	91.3 J
1012 DUP	1.4 U	68 J

153-SB-021		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	4.7	83.3 J
0204	16	269 J
0406	**60.9**	1320 J
0608	1.1 J	4940 J
0810	0.84 J	8340 J
0810 DUP	1.2 UJ	3500 J
1012	1.6 UJ	461 J

153-SB-020		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	**139**	1690
0204	**25.5**	192
0406	12.9	900
0608	**50 J**	847

153-SB-080		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	12.3	192 J
0204	7.3	153 J
0406	3	16 J
0608	1	8.1 J

153-SB-A12		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~233 J~~	~~1200~~
0204	18.9	
0406	**52.7 J**	747
0608	**1470 J**	29000 J
0810	6.6 J	1110
1214	2.1 UJ	8.6
1416	2.5 UJ	5.1 J

153-SB-057		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	1.6	29
0204	**85**	1550
0406	**141 J**	2050
0608	**1520 J**	7670

153-SB-081		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	18.7	636
0204	**89.7**	4550
0406	**65.4**	653
0608	0.64 U	10.1
0810	2.4 U	21.9
1012	0.65	17.7

153-SB-022		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0406	**389**	3140 J
0608	**2950**	11700 J
0810	1.8 U	11100 J

153-SB-A11		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~58.5 J~~	~~732~~
0204	**10900 J**	35300
0406	**67 J**	210
0608	**481 J**	5380
0810	**675 J**	25700
0810 DUP	**560**	14700
1214	2.3 UJ	16.5

153-SB-045		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0204	**84.6**	2160 J
0204 DUP	**88.5**	2070 J

153-SB-046		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0406	**47.2**	2110 J

153-SB-A10		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~59.8 J~~	~~902~~
0204	**599 J**	10300
0406	**2450 J**	8180
0810	**3680 J**	15300
1012	8 J	26.2
1214	2.3 UJ	11 J
1416	2.3 UJ	8

153-SB-053		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0-0.5	0.89	NA
3-3.5	19.2	NA

153-SB-051		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
1-1.5	2.2 J	125 J
2-2.5	**92.6 J**	1860 J

153-SB-052		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
1-1.5	**25.4**	NA

153-SB-019		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	8.8	154 J
0204	7.8 J	241 J
0406	4.6	252 J
0608	**36.1 J**	975 J
0810	**83.1 J**	1600 J
1012	0.98	965 J

153-SB-055		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
2.5-3	0.8	NA

153-SB-054		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
1-1.5	1.4	NA
3-3.5	**55.5**	NA

153-SB-044		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0204	13.2	617 J

153-SB-047		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0406	0.98	23.4 J

153-SB-043		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0204	**54.5**	1170 J

153-SB-A09		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~39.7~~	~~973~~
0406	**155**	1730
0608	**110**	683
0810	5.8 UJ	41300 J
1214	2.3 UJ	8 J
1618	2.6 UJ	11
1820	2.5 UJ	2.9

153-SB-048		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0406	1.3	26.6 J

153-SB-A08		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~1310~~	~~19500~~
0204	**4750**	18100
0406	**3110**	16000
0608	**9070**	23300
0608	**8970**	25000
0810	**5380**	14000 J
1214	14	35.4
1416	10.8	28.4
1618	5.2	20.1
1820	3.9	10.5

153-SB-049		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0406	1.2	23.4 J

153-SB-A07		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	**179 J**	3090
0204	12.6 J	121
0406	**1520 J**	19500
0608	**7750 J**	27700 J
0810	**184**	1050
1214	7.7 UJ	48300
1618	**30.4 J**	131
1820	**34.1 J**	156

153-SB-018		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	2.4	19.3
0204	**115**	2140
0406	**44**	491
0608	**64.1 J**	1000
0810	18.5	1350
1012	**42.1**	790

153-SB-017		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	0.45 UJ	167 J
0204	**20.6**	105 J
0406	**21.4**	133 J
0608	19.4 J	1820 J
0810	**71.7**	5090 J
1012	**128**	7560 J
1214	**29.8 J**	36700 J
1416	**31.3**	1100 J
1618	9.5 J	176 J
1820	8.3 J	316 J
2022	1.7 J	38.7 J
2224	0.87 J	15 J

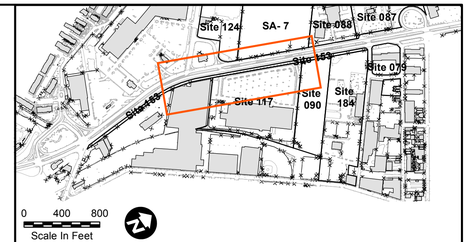
153-SB-050		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	2.2 J	125 J
0204	**92.6 J**	1860 J
0406	0.61	26.4 J

153-SB-016		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	19.3	560J
0002DP	8.9	71.4J
0204	9.8	90.3J
0204DP	8.9	44.5J
0406	7.6	223J
0608	**38.4**	725J
0810	**109**	4080J
1012	**160**	6790J
1214	**151**	10000J
1416	**153**	18100J
1618	**54**	1000J
1820	**59.4**	2020J
2022	13	357J
2224	1J	24.6J

153-SB-A06		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~194 J~~	~~3340 J~~
0406	**159 J**	3080 J
0608	**4110 J**	22500 J
0810	**3230 J**	11500 J
0810 DUP	**3600 J**	9540
1012	**1070 J**	16900 J
1214	**1970 J**	36000 J
1416	11.4 J	32.6 J
1618	2.6 J	37.7 J
1820	**96.3 J**	1250 J
2022	**70.4 J**	529 J
2224	**63.9 J**	365 J

153-SB-A05		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	**624 J**	11200 J
0204	**4520 J**	24900 J
0406	**8250 J**	36000 J
0608	**9150 J**	39800 J
0810	**7020 J**	31200 J
1214	**2570 J**	29900 J
1416	**187 J**	1270 J

153-SB-015		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	10.8 J	132 J
0204	11.8 J	375 J
0406	**121**	10100 J
0608	**56.9 J**	698 J
0810	**111**	3040 J
1012	**128 J**	4030 J
1214	**399 J**	89400 J
1416	**149 J**	38800 J
1618	17.1	965 J
1820	15.6	853 J
1820 DUP	13.5	660 J
2022	17.2	498 J
2224	9	324 J



Legend

- Soil Boring Location
- Soil Boring Location < 20 mg/kg Hexavalent Chromium
- Site Boundary
- Fenceline
- Buildings

153-SB-A18B		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~446~~	~~6620 J~~

Soil represented by sample result was excavated during previous interim remedial measures.

Notes:

Figures 4A – 4D include soil sample results from the 1997-1999 RI (TetraTech, 1999) and addition RI sampling sampling during 2009-2011.

Bold and shaded sample result exceeds the NJDEP soil criteria for hexavalent chromium of 20 mg/kg.

U = Compound was not detected.

J = Data indicates the presence of a compound that meets the identification criteria. The concentration given is an approximate value.

DUP = Duplicate soil sample.

NA = Not Analyzed.

mg/kg = milligrams per kilogram.

60 30 0 60 120

Scale In Feet

REV.	DATE	STATUS	Prepared By	Checked By

Amec Project No.
3480110271

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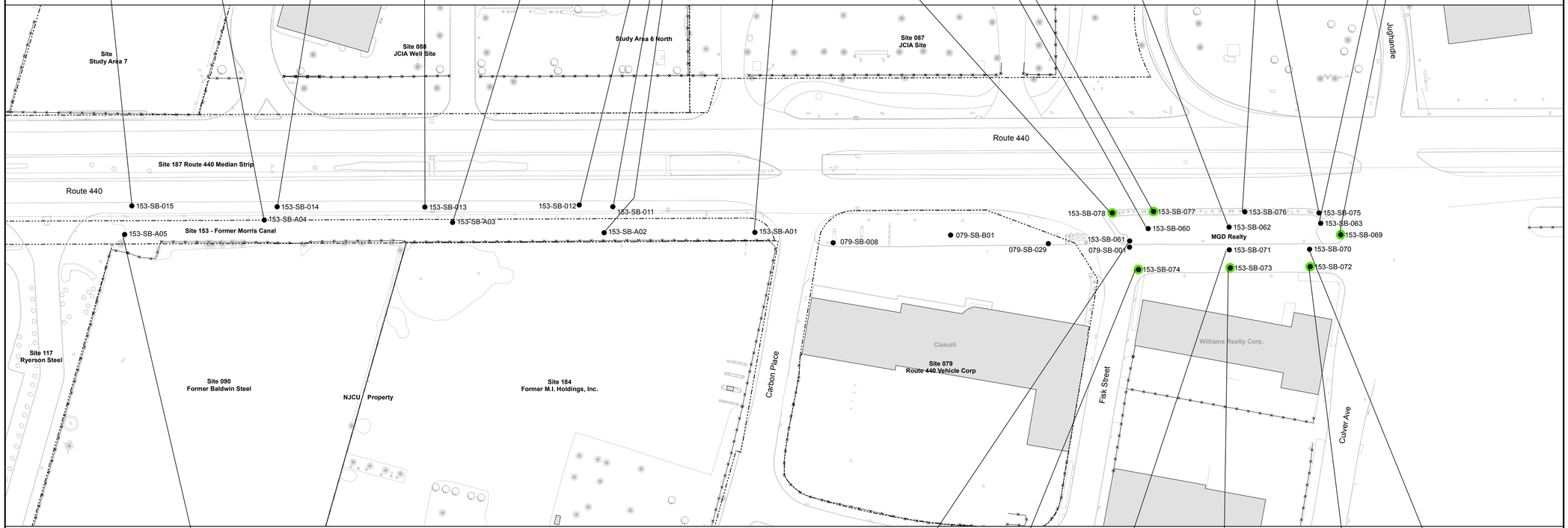
HAMILTON, NEW JERSEY 08619

Figure 4C
Soil Sample Results - Total and Hexavalent Chromium
Site 153 South Lower Segment to South Upper Segment
Study Area 5
Site 153 - Former Morris Canal
Jersey City, New Jersey



153-SB-015

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	10.8 J	132 J
0204	11.8 J	375 J
0406	**121**	10100 J
0608	**56.9 J**	698 J
0810	**111**	3040 J
1012	**128 J**	4030 J
1214	**399 J**	89400 J
1416	**149 J**	38800 J
1618	17.1	965 J
1820	15.6	853 J
1820 DUP	13.5	660 J
2022	17.2	498 J
2224	9	324 J

153-SB-A04

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	8 J	84.8 J
0406	**7680 J**	25400 J
0608	**33.2 J**	134 J
0810	**93 J**	705 J
1012	**222 J**	1130 J
1012 DUP	**229 J**	1810 J
1214	3.5 J	17.3 J

153-SB-014

Depth (feet)	Hexavalent (mg/kg)	Chromium (mg/kg)
0002	7 J	293 J
0204	14.8 J	628 J
0406	18.6 J	292 J
0608	**81.4**	2200 J
0810	**208**	1670 J
1012	**189 J**	1890 J

153-SB-013

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	9.2	272 J
0204	**196**	2410 J
0406	13.6	84.2 J
0608	**25.7**	702 J
0810	17.5	1230 J
1012	4.3 J	78800 J

153-SB-A03

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	**66.1 J**	1850 J
0204	12.6 J	99.4 J
0406	**1160 J**	9870 J
0608	**49.7 J**	357 J
0810	**227 J**	1200 J
1214	8.3 J	27 J

153-SB-012

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	10.3 J	263 J
0204	**1060 J**	7080 J
0406	**24.9**	570 J
0608	**33.7 J**	1450 J
0810	**28.1**	2230 J
1012	1.7 U	1310 J
1214	0.97 U	20.5 J
1416	14.1	42.8 J

153-SB-011

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	1.8	79.3 J
0204	**1040 J**	14600 J
0406	**50.9**	764 J
0608	**59.6**	3080 J
0608 DUP	**62.4**	1720 J
0810	**69.7**	4280 J
1012	1.6	192 J
1214	0.95 U	25 J
1416	0.93	28.7 J

153-SB-A02

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	**281 J**	5530 J
0204	**998 J**	10300 J
0406	**361 J**	3120 J
0810	6.4 UJ	28400 J
1214	2.5 UJ	9.8 J

153-SB-A01

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	5.4 J	59.3 J
0406	**7490 J**	31300 J
0608	**7690 J**	17400 J
0810	3.7 UJ	183 J
1214	**60.7 J**	3030 J
1416	**20.8 J**	59.2 J

153-SB-078

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	7.9 J	105 J
0204	7.7 J	75.9 J

153-SB-077

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	5.7 J	46.9 J
0204	3.1 J	30.2 J

153-SB-060

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	**20.1 J**	304 J
0204	**41.4 J**	203 J
0406	**40.8 J**	415 J
0608	**91 J**	2890 J
0810	2 J	9670 J
1012	1.3 J	34.8 J
1214	1.6 J	168 J

153-SB-062

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	9.4 J	129 J
0204	16.6 J	154 J
0406	**26.9 J**	114 J
0608	**163 J**	2130 J
0810	0.68 UJ	29 J
1012	0.74 J	9.8 J

153-SB-075

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	**29.6**	540 J
0204	17.5	254 J

153-SB-076

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	**55.6 J**	285 J
0204	8.5 J	86.4 J

153-SB-063

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	**32.2 J**	293 J
0204	0.92 UJ	58.5 J
0406	0.48 J	14.1 J
0608	**37.1 J**	1750 J
0810	**109 J**	637 J
1012	0.56 U	880 J
1012 DUP	0.81 U	9160 J
1214	1.1	27.8 J

153-SB-069

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	11.3	115 J
0406	0.55 U	3250 J
0608	0.87	12.5 J
0810	0.51 U	21.4 J

153-SB-A05

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	**624 J**	11200 J
0204	**4520 J**	24900 J
0406	**8250 J**	36000 J
0608	**9150 J**	39800 J
0810	**7020 J**	31200 J
1214	**2570 J**	29900 J
1416	**187 J**	1270 J

153-SB-061

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	1.9 J	13.7 J
0204	1.6 J	15.5 J
0406	**113 J**	1970 J
0608	**30 J**	1270 J
0810	2.1 J	442 J
1012	0.66 UJ	26 J

153-SB-074

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	9.5	97 J
0406	0.49 U	6.1 J
0608	0.49 U	4.9 J
0810	0.49 U	5.3 J

153-SB-071

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	6.9	87.3 J
0204	0.47 U	12.7 J
0406	**59.8**	507 J
0406 DUP	**55.5**	836 J
0810	1.5	72.7 J
1012	11.4	256 J

153-SB-073

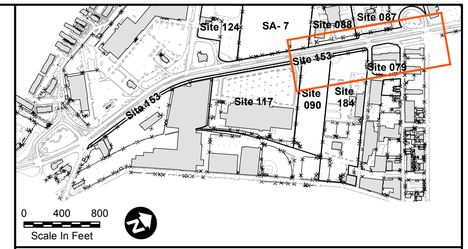
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0406	0.51	NA
0608	0.48 U	NA
0810	0.48 U	NA

153-SB-072

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0406	18	NA
0608	0.47 U	NA
0810	0.52	NA

153-SB-070

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	4.8	87.2 J
0204	0.75	25.8 J
0406	**360**	3230 J
0608	**174**	4150 J
0810	**46.7**	1240 J



Legend

- Soil Boring Location
- Soil Boring Location < 20 mg/kg Hexavalent Chromium
- Site Boundary
- Fenceline
- Buildings

153-SB-A18B

Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	~~446~~	~~6620 J~~

Soil represented by sample result was excavated during previous interim remedial measures.

Notes:

Figures 4A – 4D include soil sample results from the 1997-1999 RI (TetraTech, 1999) and addition RI sampling sampling during 2009-2011.

Bold and shaded sample result exceeds the NJDEP soil criteria for hexavalent chromium of 20 mg/kg.

U = Compound was not detected.

J = Data indicates the presence of a compound that meets the identification criteria. The concentration given is an approximate value.

DUP = Duplicate soil sample.

NA = Not Analyzed.

mg/kg = milligrams per kilogram.

60 30 0 60 120

Scale In Feet

REV.	DATE	STATUS	Prepared By	Checked By

Amec Project No.
3480110271

Prepared/Date
WSL 12/5/14

Checked/Date
AG 12/10/14

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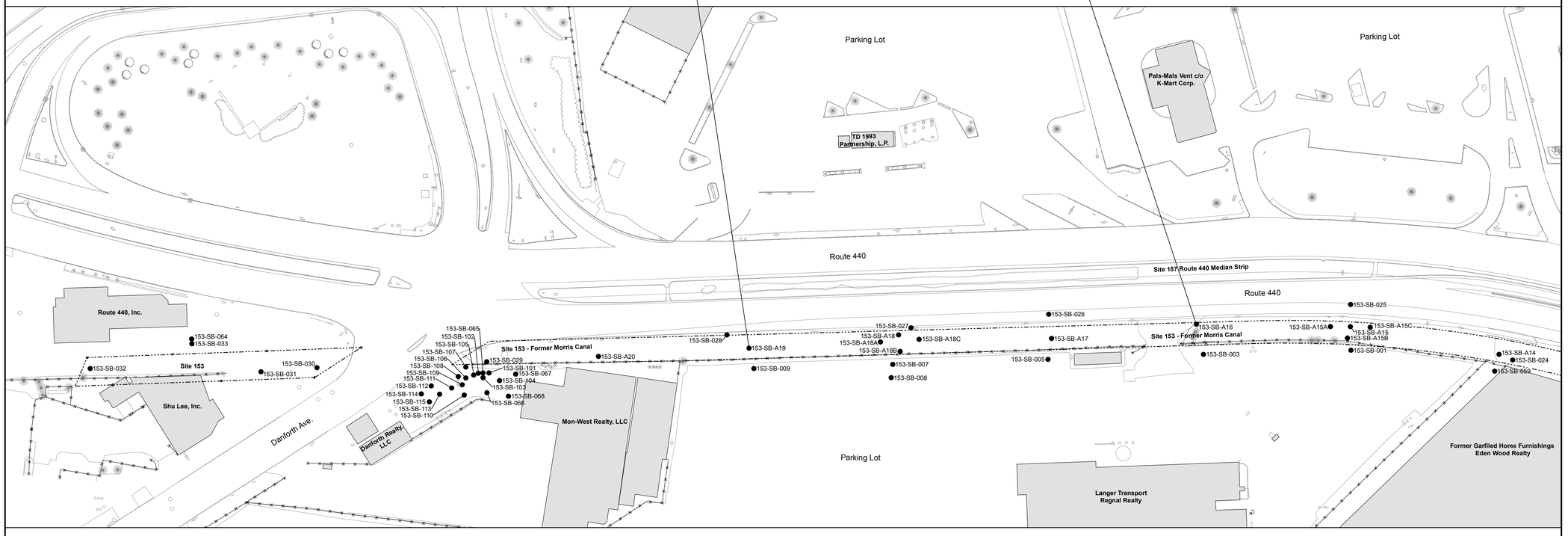
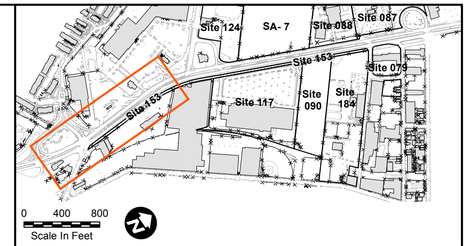
HAMILTON, NEW JERSEY 08619

Figure 4D
Soil Sample Results - Total and Hexavalent Chromium
Site 153 North Segment
Study Area 5
Site 153 - Former Morris Canal
Jersey City, New Jersey

Sample Location	153-SB-A19
Sample Depth	08-10 ft
Sample Date	5/27/1997
VOCs (mg/kg)	NE
SVOCs (mg/kg)	NE
METALs (mg/kg)	NE
PCBs (mg/kg)	NE
Pesticides (mg/kg)	NE

Sample Location	153-SB-A16
Sample Depth	08-10 ft
Sample Date	5/22/1997
VOCs (mg/kg)	NE
SVOCs (mg/kg)	
BENZO(A)ANTHRACENE	**1.1J**
BENZO(A)PYRENE	**0.95J**
BENZO(B)FLUORANTHENE	**1.5J**
METALs (mg/kg)	
ARSENIC	**331**
LEAD	**710J**
MERCURY	**398J**
VANADIUM	76.6
PCBs (mg/kg)	NE
Pesticides (mg/kg)	NE





Legend

- Soil Boring Location
- Site Boundary
- Fenceline
- Buildings

Notes:

Bold and shaded sample result exceeds the strictest New Jersey soil criteria. All results reported in milligrams per kilogram (mg/kg).

U = Compound was not detected.

J = Data indicates the presence of a compound that meets the identification criteria. The concentration given is an approximate value.

DUP = Duplicate soil sample was collected and analyzed.

NA = Not Analyzed.

NE = No Exceedance.

VOCs = Volatile Organic Compounds

SVOCs = Semivolatile Organic Compounds

PCBs = Polychlorinated Biphenyls

60 30 0 60 120

Scale In Feet

REV.	DATE	STATUS	Prepared By	Checked By

Amec Project No.
3480110271

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200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

Figure 5A
Soil Sample Results - VOCs, SVOCs, and TAL Metals
Site 153 South Lower Segment
Study Area 5
Site 153 - Former Morris Canal
Jersey City, New Jersey

Sample Location	153-SB-A13
Sample Depth	08-10 ft
Sample Date	5/22/1997
VOCs (mg/kg)	NE
SVOCs (mg/kg)	NE
METALs (mg/kg)	NE
PCBs (mg/kg)	NE
Pesticides (mg/kg)	NE

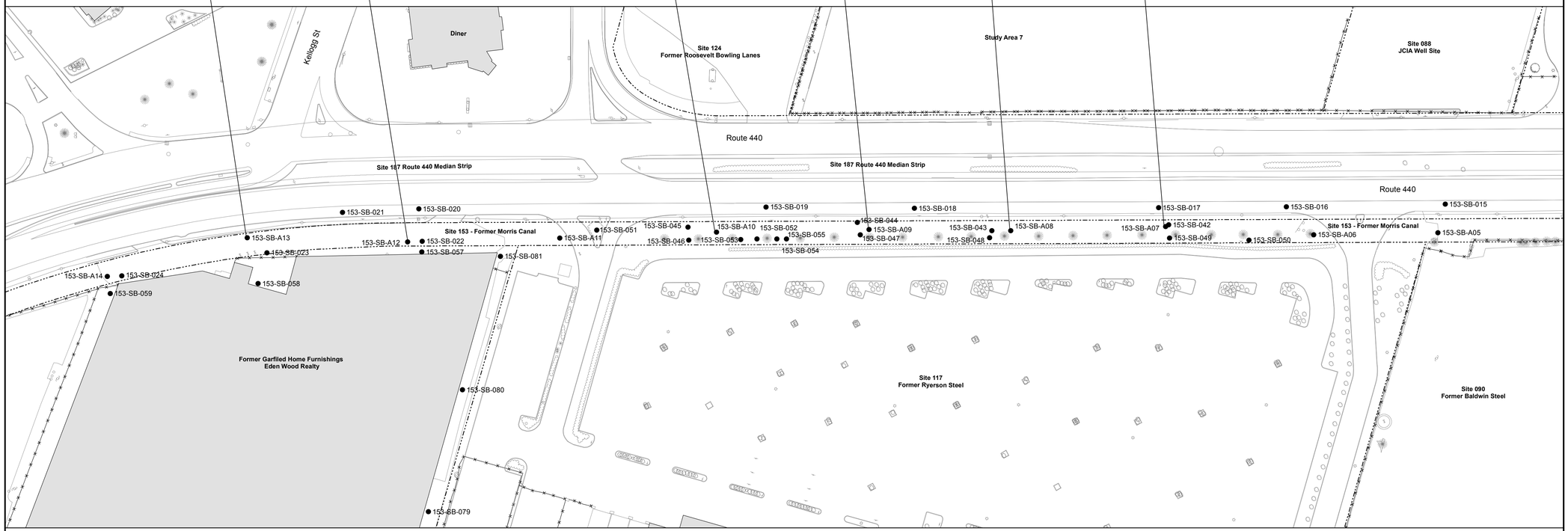
Sample Location	153-SB-A12
Sample Depth	06-08 ft
Sample Date	5/22/1997
VOCs (mg/kg)	NE
SVOCs (mg/kg)	
BENZO(A)ANTHRACENE	**300**
BENZO(A)PYRENE	**290**
BENZO(B)FLUORANTHENE	**340**
BENZO(K)FLUORANTHENE	**120J**
CARBAZOLE	**100J**
CHRYSENE	**300**
DIBENZO(A,H)ANTHRACENE	**39J**
INDENO(1,2,3-CD)PYRENE	**180**
NAPHTHALENE	**170**
METALs (mg/kg)	
ARSENIC	**47.9**
MERCURY	**201**
VANADIUM	**599**
PCBs (mg/kg)	NE
Pesticides (mg/kg)	NE

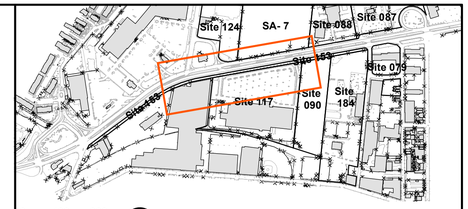
Sample Location	153-SB-A10
Sample Depth	12-14 ft
Sample Date	5/22/1997
VOCs (mg/kg)	NE
SVOCs (mg/kg)	NE
METALs (mg/kg)	NE
PCBs (mg/kg)	NE
Pesticides (mg/kg)	NE

Sample Location	153-SB-A09
Sample Depth	08-10 ft
Sample Date	5/22/1997
VOCs (mg/kg)	NE
SVOCs (mg/kg)	
BENZO(A)ANTHRACENE	**2.3J**
BENZO(A)PYRENE	**1.5J**
BENZO(B)FLUORANTHENE	**2.5J**
INDENO(1,2,3-CD)PYRENE	**0.84J**
METALs (mg/kg)	
ARSENIC	**250**
LEAD	**588**
MERCURY	**299**
PCBs (mg/kg)	NE
Pesticides (mg/kg)	NE

Sample Location	153-SB-A08
Sample Depth	08-10 ft
Sample Date	5/22/1997
VOCs (mg/kg)	NE
SVOCs (mg/kg)	NE
METALs (mg/kg)	
VANADIUM	**433**
PCBs (mg/kg)	NE
Pesticides (mg/kg)	NE

Sample Location	153-SB-A07
Sample Depth	06-08 ft
Sample Date	5/22/1997
VOCs (mg/kg)	NE
SVOCs (mg/kg)	NE
METALs (mg/kg)	
VANADIUM	**443**
PCBs (mg/kg)	NE
Pesticides (mg/kg)	NE





Legend

- Soil Boring Location
- Site Boundary
- Fenceline
- Buildings

Notes:

Bold and shaded sample result exceeds the strictest New Jersey soil criteria. All results reported in milligrams per kilogram (mg/kg).

U = Compound was not detected.

J = Data indicates the presence of a compound that meets the identification criteria. The concentration given is an approximate value.

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NA = Not Analyzed.

NE = No Exceedance.

VOCs = Volatile Organic Compounds

SVOCs = Semivolatile Organic Compounds

PCBs = Polychlorinated Biphenyls

60 30 0 60 120
Scale In Feet

REV.	DATE	STATUS	Prepared By	Checked By

Amec Project No.
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HAMILTON, NEW JERSEY 08619

Figure 5B
Soil Sample Results - VOCs, SVOCs, and TAL Metals
Site 153 South Lower Segment to South Upper Segment
Study Area 5
Site 153 - Former Morris Canal
Jersey City, New Jersey

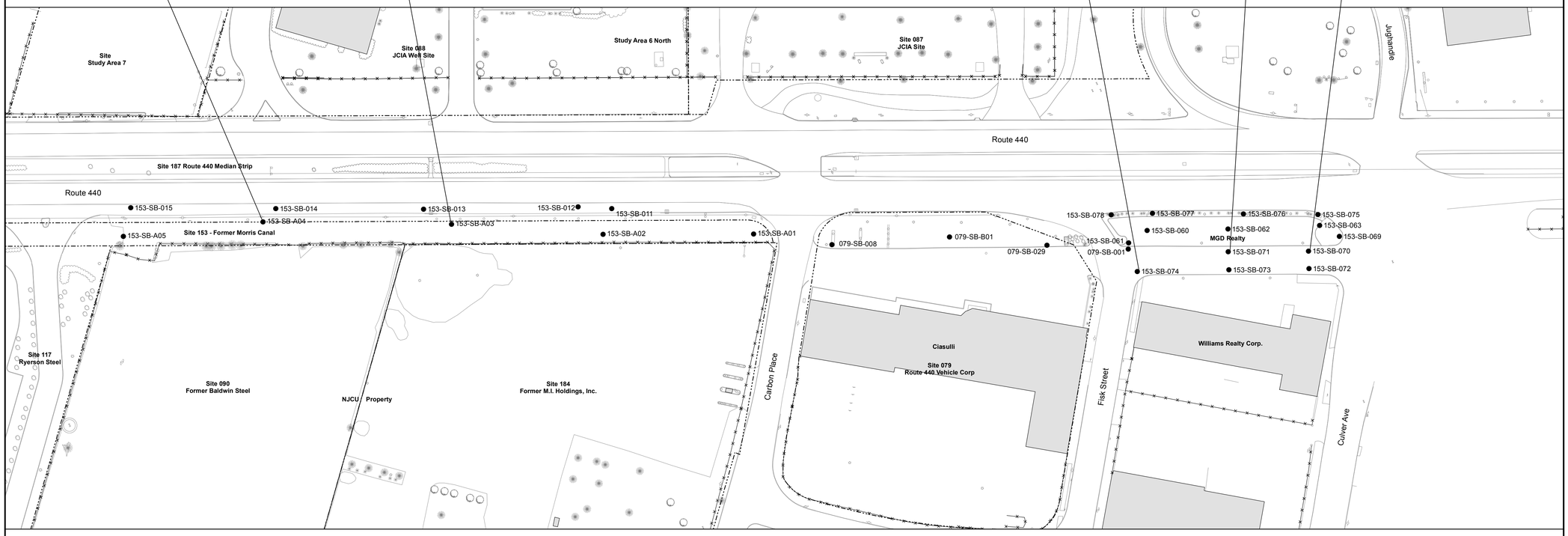
Sample Location	153-SB-A04
Sample Depth	12-14 ft
Sample Date	5/21/1997
VOCs (mg/kg)	NE
SVOCs (mg/kg)	NE
METALs (mg/kg)	NE
PCBs (mg/kg)	NE
Pesticides (mg/kg)	NE

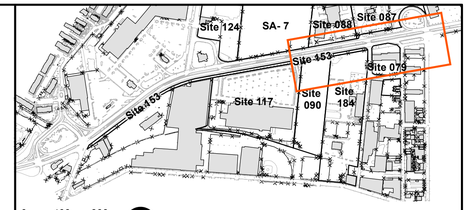
Sample Location	153-SB-A03
Sample Depth	08-10 ft
Sample Date	5/21/1997
VOCs (mg/kg)	NE
SVOCs (mg/kg)	NE
METALs (mg/kg)	
MERCURY	**32.9**
PCBs (mg/kg)	NE
Pesticides (mg/kg)	NE

Sample Location	153-SB-074
Sample Depth	1.5-2 ft
Sample Date	5/20/2011
VOCs (mg/kg)	NE
SVOCs (mg/kg)	
BENZO(A)ANTHRACENE	**38.1**
BENZO(A)PYRENE	**35.7**
BENZO(B)FLUORANTHENE	**34.6**
BENZO(K)FLUORANTHENE	**20.9**
DIBENZO(A,H)ANTHRACENE	**8.97**
INDENO(1,2,3-CD)PYRENE	**20.6**
METALs (mg/kg)	NE
PCBs (mg/kg)	NE
Pesticides (mg/kg)	NE

Sample Location	153-SB-071
Sample Depth	4.5-5 ft
Sample Date	5/20/2011
VOCs (mg/kg)	NE
SVOCs (mg/kg)	NE
METALs (mg/kg)	NE
PCBs (mg/kg)	NE
Pesticides (mg/kg)	NE

Sample Location	153-SB-070
Sample Depth	1-1.5 ft
Sample Date	5/20/2011
VOCs (mg/kg)	NE
SVOCs (mg/kg)	
BENZO(A)ANTHRACENE	**9.41**
BENZO(A)PYRENE	**5.87**
BENZO(B)FLUORANTHENE	**6.28**
DIBENZO(A,H)ANTHRACENE	**1.28**
INDENO(1,2,3-CD)PYRENE	**2.34**
METALs (mg/kg)	NE
PCBs (mg/kg)	NE
Pesticides (mg/kg)	NE





Legend

- Soil Boring Location
- Site Boundary
- Fenceline
- Buildings

Notes:

Bold and shaded sample result exceeds the strictest New Jersey soil criteria. All results reported in milligrams per kilogram (mg/kg).

U = Compound was not detected.

J = Data indicates the presence of a compound that meets the identification criteria. The concentration given is an approximate value.

DUP = Duplicate soil sample was collected and analyzed.

NA = Not Analyzed.

NE = No Exceedance.

VOCs = Volatile Organic Compounds

SVOCs = Semivolatile Organic Compounds

PCBs = Polychlorinated Biphenyls

60 30 0 60 120
Scale In Feet

REV.	DATE	STATUS	Prepared By	Checked By

Amec Project No.
3480110271

Prepared/Date
WSL 12/11/14

Checked/Date
AG 12/11/14

amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

Figure 5C
Soil Sample Results - VOCs, SVOCs, and TAL Metals
Site 153 North Segment
Study Area 5
Site 153 - Former Morris Canal
Jersey City, New Jersey

153-TWP-005		
Sample Date	Hexavalent Chromium (ug/L)	Total Chromium (ug/L)
9/26/2011	5.5 UJ	126
9/26/2011 F	5.5 UJ	7.1

153-TWP-006		
Sample Date	Hexavalent Chromium (ug/L)	Total Chromium (ug/L)
9/26/2011	5.5 UJ	70
9/26/2011 F	5.5 UJ	4 U

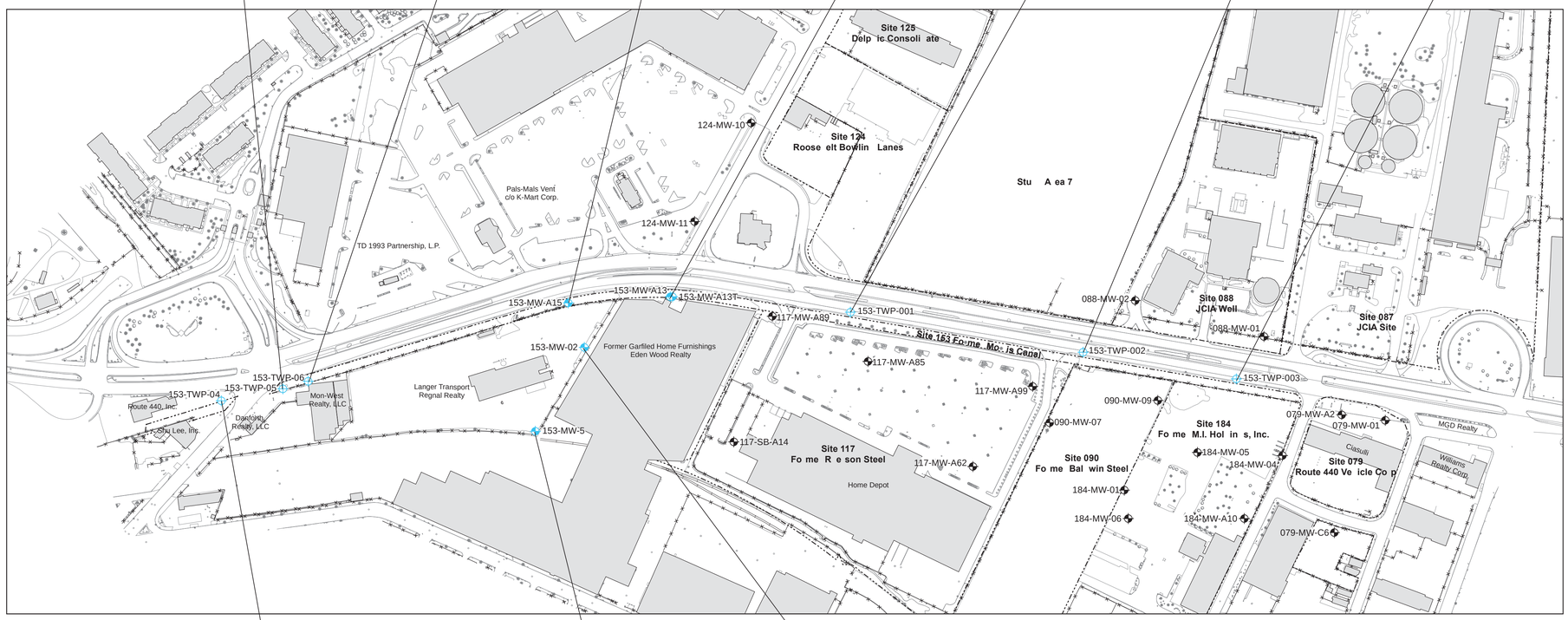
153-MW-A15		
Sample Date	Hexavalent Chromium (ug/L)	Total Chromium (ug/L)
5/26/1999	10 U	20.2
5/26/1999 F	10 U	13.6
7/14/1999	10 UJ	24.9
7/14/1999 F	10 UJ	11.8
4/14/2003	10 U	14.1 J
4/14/2003 F	10 U	5 J
7/18/2006	50 U	60.7
7/18/2006 F	50 U	10 U
10/19/2010	10 U	**161**
10/19/2010	10 UJ	**288**
10/19/2010 F	10 UJ	10 UJ
10/19/2010 F	10 UJ	10 UJ
9/23/2011	5.5 UJ	**71.4**
9/23/2011 F	5.5 UJ	10.2

153-MW-A13		
Sample Date	Hexavalent Chromium (ug/L)	Total Chromium (ug/L)
1/6/1999	**1330 J**	**1830 J**
1/6/1999 F	**571 J**	**207 J**
7/20/1999	22.2	**459**
7/20/1999 F	10 U	26
4/14/2003	**1110**	**1050**
4/14/2003 F	**772**	**892**
7/19/2006	**1100**	**1090**
7/19/2006 F	53	**133**
10/19/2010	19 J	**763**
10/19/2010 F	10 UJ	17.2 J
9/26/2011	**530 J**	**666**
9/26/2011 F	**230 J**	**345**

153-TWP-001		
Sample Date	Hexavalent Chromium (ug/L)	Total Chromium (ug/L)
3/16/2010	**2100**	**2140**
3/16/2010 F	**2100**	**2150**
3/16/2010 D	**1800**	**2150**
3/16/2010 DPF	**1900**	**2310**

153-TWP-002		
Sample Date	Hexavalent Chromium (ug/L)	Total Chromium (ug/L)
3/16/2010	**15900**	**19000**
3/16/2010 F	**16100**	**17200**

153-TWP-003		
Sample Date	Hexavalent Chromium (ug/L)	Total Chromium (ug/L)
3/16/2010	**9100**	**9670**
3/16/2010 F	**9300**	**10100**



153-TWP-004		
Sample Date	Hexavalent Chromium (ug/L)	Total Chromium (ug/L)
9/26/2011	5.5 UJ	34.2
9/26/2011 F	5.5 UJ	4 U

153-MW-5		
Sample Date	Hexavalent Chromium (ug/L)	Total Chromium (ug/L)
10/19/2010	5.5 UJ	4 U
10/19/2010 F	5.5 UJ	4 U
10/19/2010 D	5.5 UJ	4 U
10/19/2010 DPF	5.5 UJ	4 U
4/26/2011	5.5 UJ	4 U
4/26/2011 F	5.5 UJ	4 U

153-MW-2		
Sample Date	Hexavalent Chromium (ug/L)	Total Chromium (ug/L)
10/19/2010	5.5 UJ	4 U
10/19/2010 F	5.5 UJ	4 U
4/26/2011	5.5 UJ	4 U
4/26/2011 F	5.5 UJ	4 U

Le en

- Site 153 Monitoring Well Location
- Site 153 Temporary Well Location
- Off-site Monitoring Well Location
- Site Boundary
- Fenceline
- Buildings

Notes:

Bold and shaded sample result exceeds the New Jersey Groundwater Quality Standards (GWQS).

U = Compound was not detected.

J = Data indicates the presence of a compound that meets the identification criteria. The concentration given is an approximate value.

F = Filtered Sample

D = Duplicate Sample

NA = Not Analyzed.

ug/L = micrograms per liter.

190 95 0 190

Scale In Feet

REV.	DATE	STATUS	Paper B	Check B

Amec Project No.
3480110271

Prepared/Date
WSL 12/11/14

Checked/Date
AG 12/10/2014

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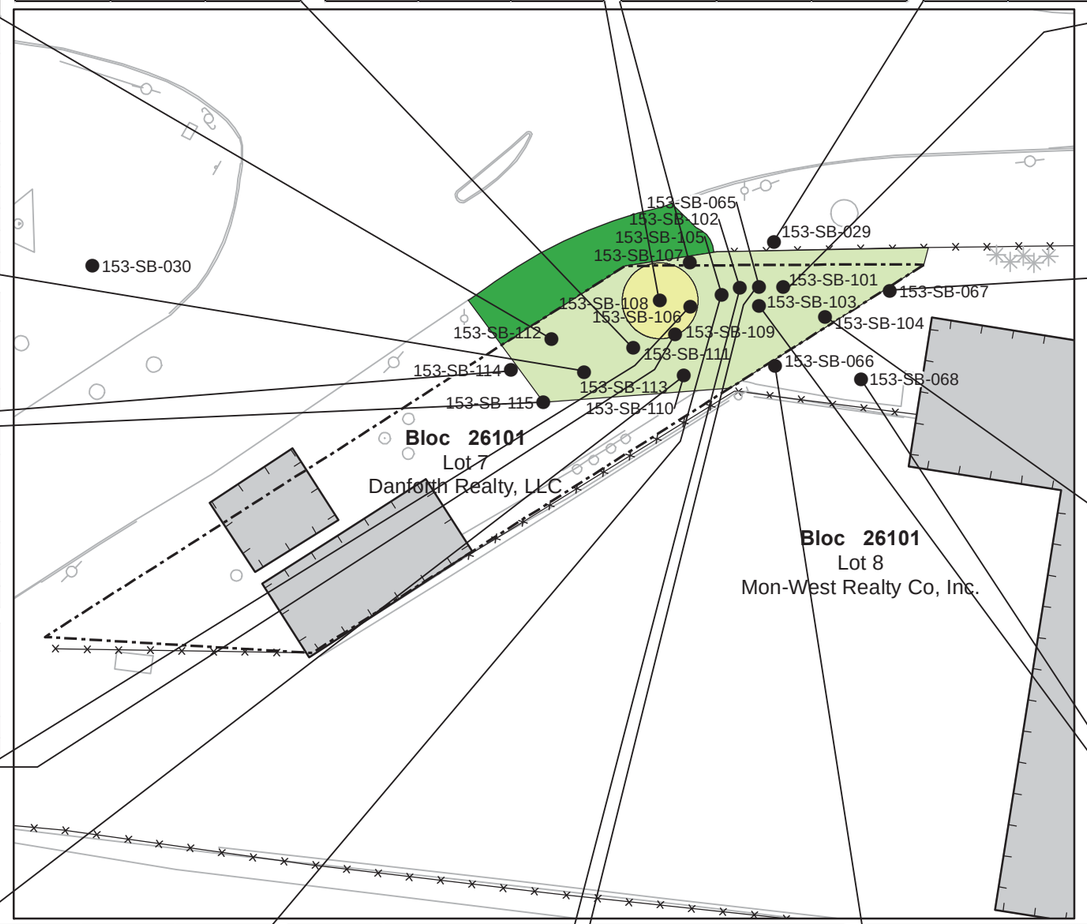
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

Fi u e 6
Groundwater Sample Results
Study Area 5
Site 153 - Former Morris Canal
Jersey City, New Jersey



153-SB-112		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
1-1.5	6.8	89.8 J
2-2.5	**27.6**	349 J
2-2.5 DP	17.6	268 J
4-4.5	**137**	2880 J
7.5-8	**250 J**	1140 J
8-8.5	**24.4**	1420 J
10.5-11	**55.6**	496 J

153-SB-113		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
1.5-2	2.9	24.4 J
2.5-3	0.56 J	6.5 J
4.5-5	1 J	14 J
4.5-5 DP	1 J	23.7 J
6.5-7	**68.3**	201 J
8.5-9	7.4	503 J
10-10.5	7.7	26.3 J

153-SB-114		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
6.5-7	11.5	38.3 J

153-SB-115		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
2.5-3	2.7	22.8 J
4-4.5	7.8	69.4 J
6.5-7	8.1	17.4 J
8.5-9	3.4 U	36.4 J

153-SB-106		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0.5-1	**322**	NA
1-1.5	**146**	NA

153-SB-109		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0.5-1	**248**	NA
1-1.5	**576**	NA
2-2.5	12.3	NA
4-4.5	**464**	NA

153-SB-110		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0.5-1	6.9	NA
1-1.5	6.6	NA
2-2.5	1.7	NA
4-4.5	3	NA
6-6.5	3.1	NA

153-SB-111		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0.5-1	**20.8**	NA
1-1.5	**125**	NA
2-2.5	**106**	NA
4-4.5	**227**	NA
6-6.5	**126**	NA

153-SB-108		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0.5-1	**48.9**	NA
1-1.5	**7000**	NA

153-SB-107		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0.5-1	**163**	NA
1-1.5	**169**	NA
2-2.5	**24**	NA
4-4.5	**122**	NA
6-6.5	7.9	NA

153-SB-029		
Depth (feet)	Hexavalent (mg/kg)	Chromium (mg/kg)
0002	10 J	485 J
0204	16.2 J	160 J
0406	**117 J**	5100 J
0608	**1730 J**	12900 J
0810	**7860**	20100 J
1012	1 J	1060 J
1214	1.6 UJ	41.8 J

153-SB-101		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
2-2.5	**22**	NA
4-4.5	0.88	NA
6-6.5	2.5	NA
8-8.5	0.52	NA

153-SB-067		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	0.46 U	13.3
0204	3.2	17.5
0406	0.86 U	10.1
0608	0.59	10.1
0810	0.97 U	12.4
1012	0.95 UJ	11700
1214	4.1 U	39.8

153-SB-104		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
1-1.5	0.79	NA
3-3.5	0.67	NA
5-5.5	0.92	NA
7-7.5	0.54	NA
9-9.5	5 U	NA
11-11.5	5.9	NA
12-12.5	7.3 U	NA

153-SB-068		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	4.1 J	65.6
0204	0.59 UJ	16.3
0406	0.8 J	20.4
0608	0.61 U	19.8
0810	0.71 U	21.4
1012	10.7 J	24200
1214	0.7 UJ	41.5

153-SB-103		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
2-2.5	1.2	NA
4-4.5	0.89	NA
6-6.5	0.68	NA
8-8.5	0.73 U	NA

153-SB-105		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0.5-1	16.1	NA
1-1.5	2.9	NA
2-2.5	5.8	NA
4-4.5	14.1	NA
6-6.5	**112**	NA

153-SB-102		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
2-2.5	**109**	NA
4-4.5	**68.5**	NA
4-4.5 DP	**69.5**	NA
6-6.5	**160**	NA
8-8.5	0.63 U	NA

153-SB-065		
Depth (feet)	Hexavalent (mg/kg)	Chromium (mg/kg)
0204	**20.5**	435
0406	**24**	488
0608	**58**	699
0810	2	579
1012	0.87 UJ	8730

153-SB-066		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	2 J	17.2
0204	0.58 U	18.7
0406	0.64 UJ	19.9
0608	2.5	19.3
0810	0.91 UJ	43.4
1012	3.2 J	441

Le en

- Soil Boring Location
- Danforth Realty Property Boundary
- Existing Building
- Soil Excavation 0-1' bgs Deed Notice 1-10' (restore asphalt as cap)
- Soil Excavation 0-2' bgs Deed Notice 2-10' (restore asphalt as cap)
- Resurfacing Asphalt

153-SB-A18B		
Depth (feet)	Hexavalent Chromium (mg/kg)	Total Chromium (mg/kg)
0002	**446**	6620 J

Soil represented by sample result was excavated during previous interim remedial measures.

Notes:

This figure includes soil sample results from the 1997-1999 RI (TetraTech, 1999) and addition RI sampling sampling during 2009-2014.

Bold and shaded sample result exceeds the NJDEP soil criteria for hexavalent chromium of 20 mg/kg.

U = Compound was not detected.

J = Data indicates the presence of a compound that meets the identification criteria. The concentration given is an approximate value.

DUP = Duplicate soil sample.

NA = Not Analyzed.

mg/kg = milligrams per kilogram.

Map Reference:

Danforth Realty property boundary from Maser Consulting, P.A. electronic AutoCAD survey file, received 1/13/13.

40 0 40 80

Scale In Feet

Amec Project Number:
3480130371

Prepared/Date:
WSL 10/14/2014

Checked/Date:
AG 10/14/2014

ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

Fi u e 7A
Remedial Action Site Plan
Block 26101, Lot 7
Danforth Realty, LLC Property
Site 153 Former Morris Canal
Jersey City, New Jersey

153-SB-026		
Depth (feet)	Hexavalent (mg/kg)	Chromium (mg/kg)
0002	2.3 J	29.5 J
0002 DUP	0.92 UJ	26.7 J
0204	1.1 J	9.9 J
0406	1 UJ	8.8 J
0608	**33 J**	918 J
0810	**31.6 J**	1420 J
1012	**39.9 J**	1530 J

153-SB-025		
Depth (feet)	Hexavalent (mg/kg)	Chromium (mg/kg)
0002	1.5	20.1 J
0204	0.45 U	9.4 J
0406	0.66 J	11.6 J
0608	**104**	1090
0810	1.2	44.3
1012	**92.5**	1070

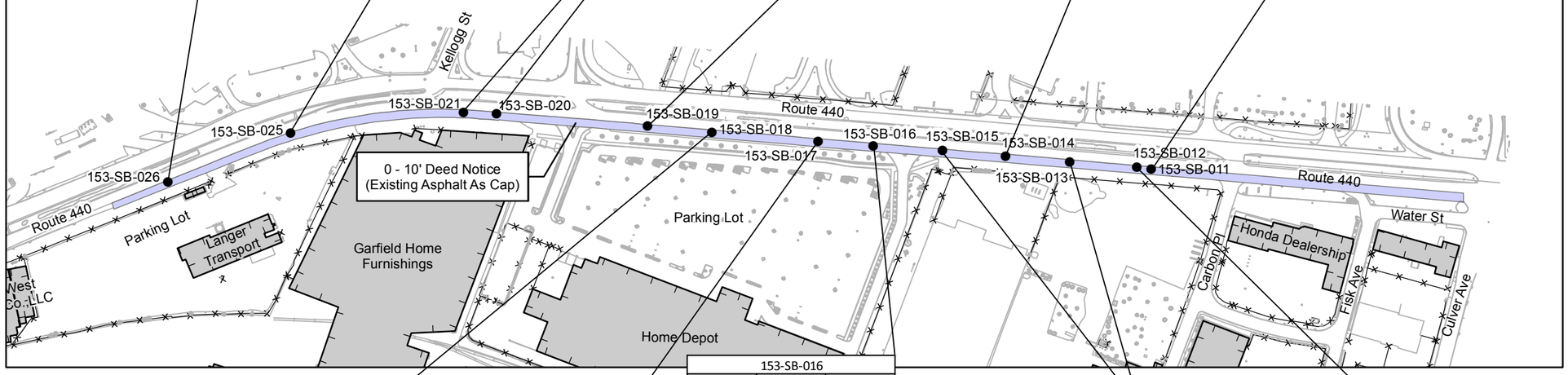
153-SB-021		
Depth (feet)	Hexavalent (mg/kg)	Chromium (mg/kg)
0002	4.7	83.3 J
0204	16	269 J
0406	**60.9**	1320 J
0608	1.1 J	4940 J
0810	0.84 J	8340 J
0810 DUP	1.2 UJ	3500 J
1012	1.6 UJ	461 J

153-SB-020		
Depth (feet)	Hexavalent (mg/kg)	Chromium (mg/kg)
0002	**139**	1690
0204	**25.5**	192
0406	12.9	900
0608	**50 J**	847

153-SB-019		
Depth (feet)	Hexavalent (mg/kg)	Chromium (mg/kg)
0002	8.8	154 J
0204	7.8 J	241 J
0406	4.6	252 J
0608	**36.1 J**	975 J
0810	**83.1 J**	1600 J
1012	0.98	965 J

153-SB-014		
Depth (feet)	Hexavalent (mg/kg)	Chromium (mg/kg)
0002	7 J	293 J
0204	14.8 J	628 J
0406	18.6 J	292 J
0608	**81.4**	2200 J
0810	**208**	1670 J
1012	**189 J**	1890 J

153-SB-011		
Depth (feet)	Hexavalent (mg/kg)	Chromium (mg/kg)
0002	1.8	79.3 J
0204	**1040 J**	14600 J
0406	**50.9**	764 J
0608	**59.6**	3080 J
0608 DUP	**62.4**	1720 J
0810	**69.7**	4280 J
1012	1.6	192 J
1214	0.95 U	25 J
1416	0.93	28.7 J



153-SB-018		
Depth (feet)	Hexavalent (mg/kg)	Chromium (mg/kg)
0002	2.4	19.3
0204	**115**	2140
0406	**44**	491
0608	**64.1 J**	1000
0810	18.5	1350
1012	**42.1**	790

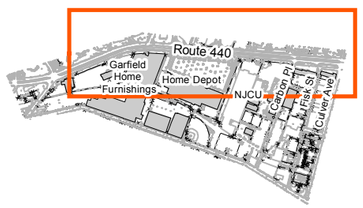
153-SB-017		
Depth (feet)	Hexavalent (mg/kg)	Chromium (mg/kg)
0002	0.45 UJ	167 J
0204	**20.6**	105 J
0406	**21.4**	133 J
0608	19.4 J	1820 J
0810	**71.7**	5090 J
1012	**128**	7560 J
1214	**29.8 J**	36700 J
1416	**31.3**	1100 J
1618	9.5 J	176 J
1820	8.3 J	316 J
2022	1.7 J	38.7 J
2224	0.87 J	15 J

153-SB-016		
Depth (feet)	Hexavalent (mg/kg)	Chromium (mg/kg)
0002	19.3	560 J
0002 DUP	8.9	71.4 J
0204	9.8	90.3 J
0204 DUP	8.9	44.5 J
0406	7.6	223 J
0608	**38.4**	729 J
0810	**109**	4080 J
1012	**160**	6790 J
1214	**151**	10000 J
1416	**153**	18100 J
1618	**54**	1000 J
1820	**59.4**	2020 J
2022	13	357 J
2224	1 J	24.6 J

153-SB-015		
Depth (feet)	Hexavalent (mg/kg)	Chromium (mg/kg)
0002	10.8 J	132 J
0204	11.8 J	375 J
0406	**121**	10100 J
0608	**56.9 J**	698 J
0810	**111**	3040 J
1012	**128 J**	4030 J
1214	**399 J**	89400 J
1416	**149 J**	38800 J
1618	17.1	965 J
1820	15.6	853 J
1820 DUP	13.5	660 J
2022	17.2	498 J
2224	9	324 J

153-SB-013		
Depth (feet)	Hexavalent (mg/kg)	Chromium (mg/kg)
0002	9.2	272 J
0204	**196**	2410 J
0406	13.6	84.2 J
0608	**25.7**	702 J
0810	17.5	1230 J
1012	4.3 J	78800 J

153-SB-012		
Depth (feet)	Hexavalent (mg/kg)	Chromium (mg/kg)
0002	10.3 J	263 J
0204	**1060 J**	7080 J
0406	**24.9**	570 J
0608	**33.7 J**	1450 J
0810	**28.1**	2230 J
1012	1.7 U	1310 J
1214	0.97 U	20.5 J
1416	14.1	42.8 J



0 1,000 2,000
Scale In Feet

- Amec Soil Boring Location
- Existing Asphalt as Cap and Deed Notice Area
- Existing Building

Notes:

Sample shaded and bold exceed 20 mg/kg for Hexavalent Chromium

U = Compound was not detected. The Practical Quantitation Limit for Hexavalent Chromium is 2 mg/kg.

J = Data indicates the presence of a compound that meets the identification criteria. The concentration given is an approximate value.

DUP = Duplicate soil sample was collected and analyzed.

NA = Not Analyzed.

300 0 300 600
Scale In Feet

Amec Project Number:
3480110271

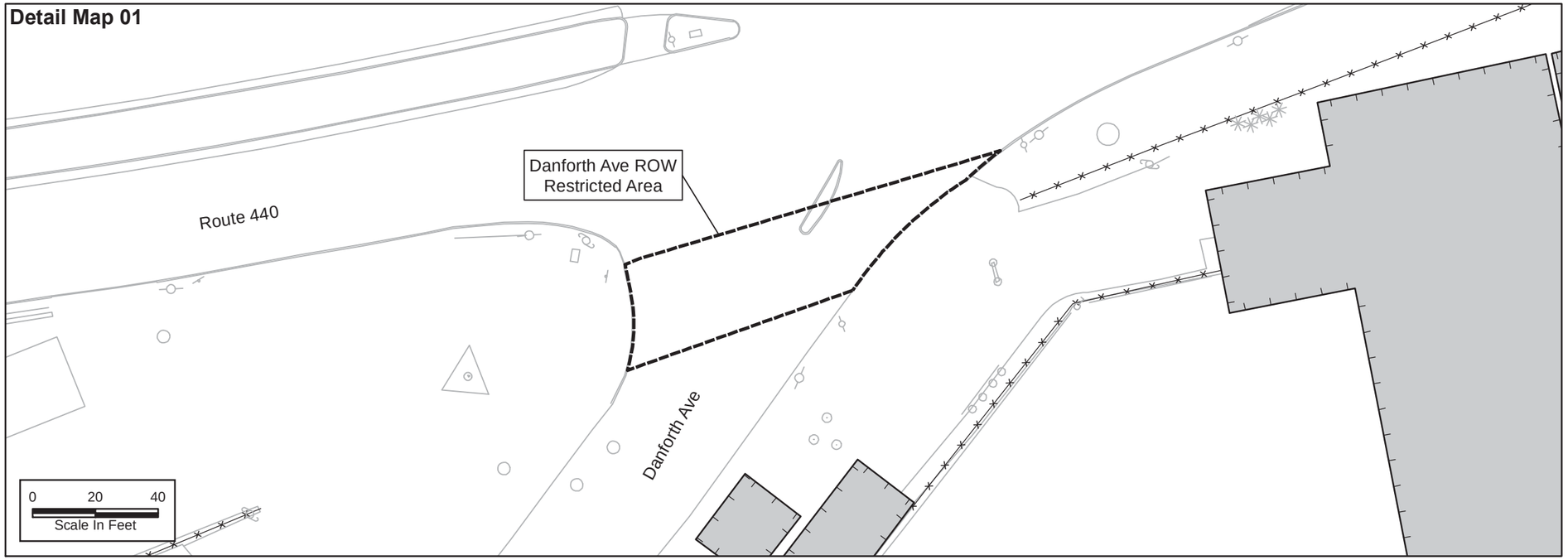
Prepared/Date:
WSL 12/11/2014

Checked/Date:
AG 12/11/2014

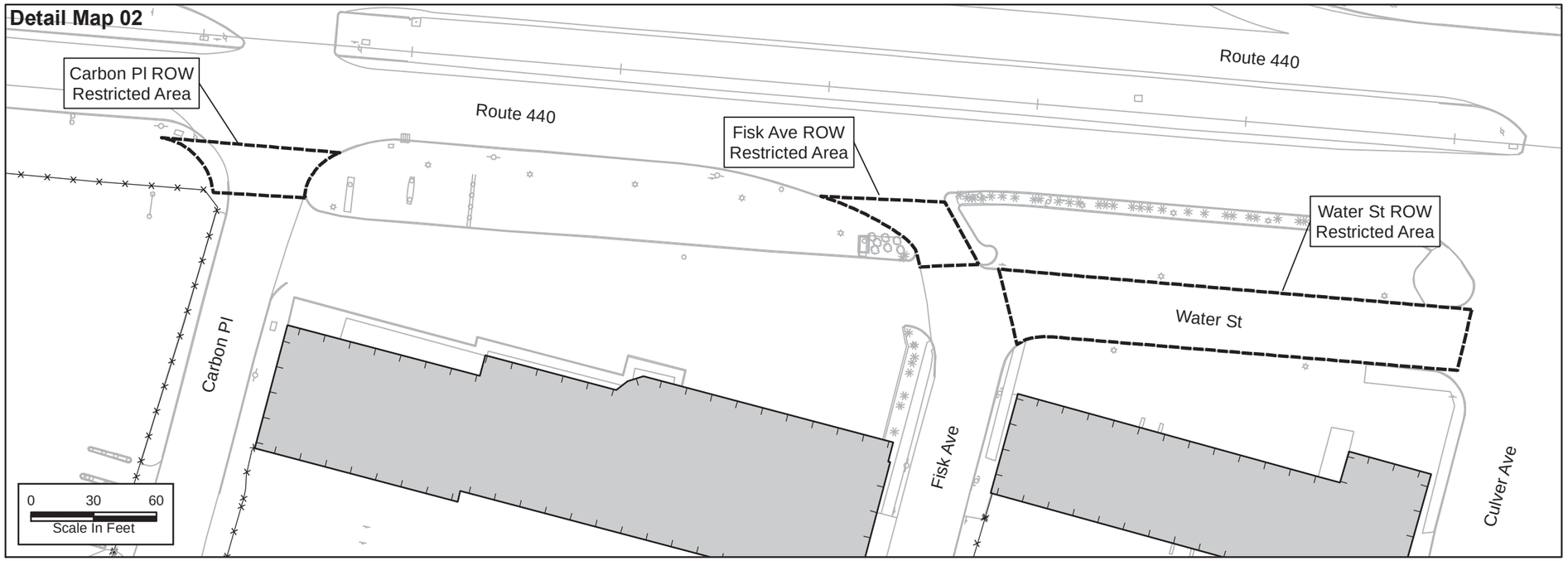
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

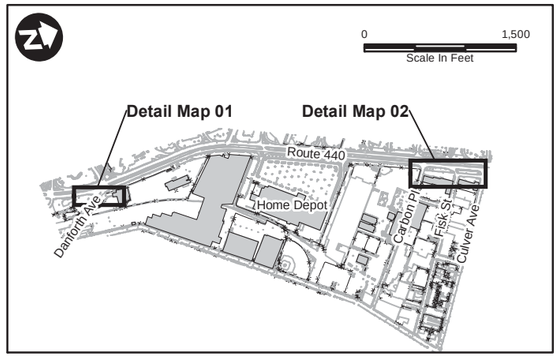
Figure 7B
Remedial Action Site Plan
New Jersey Highway Route 440
Site 153 Former Morris Canal
Jersey City, New Jersey

Detail Map 01



Detail Map 02





Le en

- Existing Asphalt as Cap and Deed Notice Area
- Existing Building

	Amec Project Number: 3480110271	
	Prepared/Date: WSL 12/11/2014	Checked/Date: AG 12/11/2014

ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

Figure 7C
Proposed Remedial Actions
Water Street, Fisk Street, Carbon Place and Danforth Avenue (Right of Way)
Stie 153 Former Morris Canal
Jersey City, New Jersey

APPENDIX A

REGULATORY CORRESPONDENCE

Honeywell
P.O. Box 1057
Morristown, NJ 07962-1057

September 18, 2006

Mr. Frank Faranca, Case Manager
New Jersey Department of Environmental Protection
Bureau of Case Management
Division of Responsible Party Site Remediation
401 East State Street, P.O. Box 028
Trenton, New Jersey 08625-0028

Re: Remedial Investigation Work Plan Addendum
Study Area 5 – Site 153 Former Morris Canal
Jersey City, Hudson County, NJ

Dear Mr. Faranca:

This letter confirms receipt of the New Jersey Department of Environmental Protection's (NJDEP or Department) letter dated July 18, 2006 (Comment Letter) regarding the Remedial Investigation Work Plan (RIWP) Addendum for Study Area 5 Site 153 (Site). The RIWP Addendum was submitted to the NJDEP during June 2005. Honeywell hereby transmits its responses to the NJDEP Comment Letter regarding the referenced submittal. Honeywell has listed the Department's comments in italics and provided its responses in this letter.

Groundwater Comments

1. *Section 1.4, Summary of Previous Investigations – Groundwater, page 7. The second paragraph states that "based on the recent groundwater sampling results, the area of shallow groundwater concentrations containing chromium above the GWQS has been delineated and includes the central portion of Site 153 adjacent to Site 090 and Site 117." Given that the monitoring wells within Sites 184 and 079 are not within Site 153, and are hydraulically upgradient, Honeywell cannot be sure that the groundwater contamination associated with Site 153 has been delineated. Soil boring 153-SB-A01 (at the northern edge of Site 184) had hexavalent chromium at 7690 mg/kg at a depth of 6 to 8 feet, below the water table. The NJDEP requires a monitoring well be installed at this location to verify shallow groundwater conditions.*

Honeywell Response:
Regarding the requested additional well location in the area of previous soil boring location 153-SB-A01, it should be noted that Honeywell installed an additional monitoring well (184-MW-002) approximately 40 feet north of this location as part of the supplemental RI activities conducted at Site 184 during 2005, in the area of soil boring 184-SB-A02 (hexavalent chromium detected in soils from 4,830 to 5310 mg/kg at depths between 6 to 10 feet). Soil sample results for borings located on Site 184 proximate to Site 153 were included on the RIWP Figure 2 for reference. Honeywell believes that groundwater data collected at 184-MW-002 would be representative of groundwater conditions in the area of the requested additional well location (153-SB-A01) since similar hexavalent chromium concentrations were detected in soils at both locations. Groundwater sample results for 184-MW-002 were included with the Supplemental RIR/RASR/RAWP for Study Area 5 Sites 090 & 184 and portion of Site 153 abutting Sites 090 & 184, dated February 2006. Groundwater sample results for 184-MW-184 from April-May 2005

indicated total chromium concentrations ranging from 155 to 245 micrograms per liter (ug/l), above the NJDEP groundwater quality standard of 70 ug/l; hexavalent chromium was not detected above the laboratory detection limit of 10 ug/l. More recent data collected during May 2006 indicates total chromium concentrations ranging from 52 to 73 ug/l, and hexavalent chromium results were non-detect. As indicated in the Supplemental RIR/RASR/RAWP dated February 2006, remedial actions are planned on the portion of Site 153 located next to Sites 090 and 184 in connection with the New Jersey City University (NJCU) redevelopment project.

Honeywell respectfully requests that the NJDEP review the above information regarding the need for an additional well before Honeywell makes any commitment for additional work. Honeywell is available to further discuss this request after the NJDEP has had an opportunity to review the submitted information.

2. *Section 1.5.2, Objectives, page 9. The second to last paragraph states that "additional groundwater investigations for Site 153 are not proposed in this work plan based on existing groundwater data indicating that groundwater impacts with chromium above the GWQS in the shallow water-bearing zone in the area of Site 153 have been delineated." As discussed in the comment for Section 1.4 above, the NJDEP disagrees with this assessment. Existing wells are not in the best position to monitor groundwater at Site 153 since the site appears to be downgradient of these wells (refer to Figure 6 – Groundwater Elevations).*

   Honeywell states that "additional monitoring wells may be installed based on the findings of the soil sampling program." The NJDEP concurs. If the utility conduits under Route 440 are acting as a local groundwater sink, as implied in Figure 6, the fate of the contaminated groundwater entering this conduit will also need to be determined.

Honeywell Response:
The Department's comment is noted. Honeywell believes that existing monitoring wells on Site 153 (153-MW-A13, 153-MW-A15), and other monitoring wells at adjacent SA-5 sites (e.g., 090-MW-010, 090-MW-E01, 117-MW-A89, 184-MW-002, 079-MW-A02) proximate to Site 153 within areas of chromium-impacted fill containing similar levels of hexavalent chromium in soils, provide representative data on shallow groundwater conditions for areas of chromium-impacted fill along Site 153.

With respect to groundwater delineation, groundwater impacts in the area of Site 153 have been generally delineated based on previous results for existing monitoring wells on Site 153 and other monitoring wells associated with Study Area 5, Study Area 6, and Study Area 7. Monitoring wells on other sites associated with Study Area 5 (e.g., Sites 079, 090, 117, 184) provide data for groundwater delineation north and east (upgradient) of Site 153; monitoring wells at Study Area 6 provide data west (downgradient) of Site 153; and monitoring wells 153-MW-A13 and 153-MW-A15 provide data along the southern portion of Site 153. Groundwater sample results for the southernmost well (153-MW-A15) indicate chromium levels below the GWQS of 70 ug/l.

Soil sample results indicate that hexavalent chromium concentrations in soils within the southern portion of Site 153 (e.g., south of Kellogg Street) are about an order of magnitude lower compared to the portion Site 153 located adjacent to Sites 117 and 090/184, e.g., levels below 1,000 mg/kg in the southern portion

of Site 153 compared to levels greater than 10,000 mg/kg at some locations in the remaining portion Site 153 next to Sites 117, 090 and 184. Based on the soil data and groundwater results for 153-MW-A15, fill soils within the southern portion of Site 153 are not impacting groundwater quality above the GWQS.

As indicated in the RIWP Addendum, additional monitoring wells will be installed based on the results of the soil sampling program. Based on existing data and NJDEP comments, one additional monitoring well may be installed within the northern portion of Site 153 adjacent to Site 184, as indicated in Response to Comment #1. Based on results of the proposed additional soil sampling program, additional groundwater sample points or wells may also be installed within the Route 440 median strip to provide groundwater data west (downgradient) of Site 153, and further refine groundwater delineation in the area between Site 153 and Study Areas 6 & 7, located on the opposite side of Route 440.

Soil Comments

3. *Data are presumed to be accurate, as presented. Firms subcontracted by Honeywell previously validated these data. The validated data from previous remedial investigations and remedial actions at Study Areas 1 through 7 (including Study Area 2) were delivered to NJDEP on 25 CDs. Honeywell recently submitted a data submittal spreadsheet for selection (percentage and priority basis) of data deliverable packages and validation reports. Selected data validation reports and associated deliverable package hard copies will then be reviewed by the Office of Data Quality.*

Honeywell Response:
The Department's comment is noted.

3. *Section 1.2 (Site Description), page 3, 2nd paragraph and Section 2.10 (Reporting), page 14.*
It was stated in Section 1.2, "The Site contains a 36-inch sewer line owned and operated by the Bayonne Municipal Utilities Authority (MUA). In 1990, the City of Bayonne excavated a section of the former Morris Canal, installed a sewer pipeline, and backfilled the excavation with clean fill. After the discovery of chromium impacts in 1990, the property was paved with asphalt by Honeywell." It was assumed during this review that the referenced sewer system upgrade activities would be discussed and depicted (along with other underground utilities) in the pending combined Supplemental RIR/RASR/RAWP.

Honeywell Response:
The Department's comment is noted. Additional information on the previous sewer system upgrade activities will be provided with a Supplemental RIR/RASR/RAWP following completion of the additional RI activities, provided that such information can be obtained from the Bayonne MUA.

4. *Section 1.5.1 (Scope), page 3, 2nd bullet and Section 2.5 (Soil Borings/Sampling), pages 12 and 13. It was stated in Section 1.5.1, "Collection of 5 samples for Synthetic Precipitation Leaching Procedure (SPLP) analysis form chromium-impacted fill soils to provide additional data for the evaluation of remedial actions." It was also stated in Section 2.5, "In addition, soil samples from selected borings (153-SB-001, 002, 003, 005, 007) will be collected for SPLP analyses (total and hexavalent chromium) to provide additional data on fill soils that may be acting as a potential source of*

groundwater contamination. Soil samples for SPLP analysis will be collected at depth intervals corresponding to previous soil sample data indicating elevated hexavalent chromium concentrations."

Clarification regarding the intended purpose and implementation of SPLP analysis, as it relates to future remedial decisions, is required for the following reasons:

- *Collection of soil samples for SPLP analysis is relatively new to the Hudson County Chromium Sites, therefore NJDEP would require that the purpose and implementation be clearly understood by all parties.*
- *As proposed in Table 1 (Summary of Proposed Sampling Program), SPLP analysis would be performed on soil samples collected on soil samples collected six inches above the water table and below the water table (5-15 feet). As proposed, it was not clear if samples will be collected from fill material containing Chromate Chemical Production Waste (CCPW) and native soil beneath the CCPW and CCPW-contaminated material, as opposed to soil intervals with "elevated hexavalent chromium concentrations."*
- *Groundwater contamination in the shallow water-bearing zone within Site 153 has been identified, as presented on Figure 8 (Total/Filtered Hexavalent Chromium in Groundwater Shallow Zone, September 2004).*
- *Previous soil samples collected during the sewer system upgrade activities were reported to contain Extraction Procedure (EP) Toxicity total chromium concentrations that ranged from non-detect (<0.5 milligrams per liter) to 59.6 milligrams per liter.*

Therefore, Honeywell should provide NJDEP with the rationale for soil sample collection and SPLP analysis, as proposed in this document.

Honeywell Response:
The SPLP test is an EPA SW-846 analytical method (Method 1312) that has been adopted by the NJDEP and can be used to determine the potential for contaminated soils to impact groundwater. The results of this analysis can be used directly to determine site-specific impact to groundwater or surface water cleanup goals, or may be used indirectly to determine a site-specific partitioning coefficient (*kd*) that can be used in groundwater modeling efforts. Because the SPLP test is conducted with actual soil samples collected on-site (e.g., COPR-impacted areas), it provides a more representative estimate of potential impacts to groundwater relative to standards determined via other methods or using generic assumptions. The conditions of the SPLP test simulate actual environmental precipitation, in that the leaching solution is a simulation of mid-Atlantic rainfall (pH 4.2). Thus, the SPLP test provides a more realistic estimate of the leaching potential of contaminants that may occur under field conditions on-site.

For this site investigation, samples will be collected from COPR-impacted fill soils, including depth intervals corresponding to elevated hexavalent chromium concentrations. The SPLP results will be evaluated in conjunction with the soil and groundwater results to assess the fate and transport of hexavalent chromium including use in groundwater modeling and evaluation of natural attenuation.

5. *Section 2.5 (Soil Borings/Sampling), page 12, 2nd and 4th bullets. Honeywell should conduct soil borings within the Route 440 median strip along the entire length of Site 153, for identification of CCPW and CCPW-contaminated material beneath Route 440 (i.e., adjacent to Sites 117, 90, 184, and 079). In addition, additional borings are required northeast of boring 79-SB-B01 for horizontal and vertical delineation purposes.*

Honeywell Response:
The proposed soil boring and sampling program includes borings for delineation of chromium impacts mainly along the southern portion of Site 153 (located south of other sites comprising SA-5), including four (4) soil borings (153-SB-017 through 153-SB-120) within the Route 440 median strip located west of the southern portion of Site 153 (south of the other sites comprising SA-5).

The Site Survey/Utility Markout task (RIWP Section 2.4) includes review of available drawings and historical information regarding Site 153, and a geophysical survey to develop a profile of subsurface conditions in the area of the former canal and sewer pipeline. Information from the historical records review and geophysical survey will be evaluated to help determine the western extent of the former canal relative to current surface features. Following this task, Honeywell will attempt to install additional borings along the western perimeter of Site 153 (up to 6 possible borings identified as 153-SB-121 through 153-SB-126) as indicated on revised Figure 2 (attached). The proposed soil boring locations may be adjusted based on information from the historical records review, geophysical survey, and utility mark-outs. Based on results of the additional soil borings, a determination will be made regarding the need for additional soil sampling for delineation west of Site 153 (i.e., within Route 440 right-of way or median strip).

With respect to delineation northeast of boring 079-SB-B01, additional borings were completed north and east of this location as part of the supplemental RI activities for Site 079 completed during 2005. Soil sample results from these borings were submitted to the NJDEP in the Supplemental RIR for Site 079 dated July 2006. As indicated in that report, soil impacts on Site 079 have been characterized and delineated, with the exception of one (1) sample location (079-SB-001) near the northwest perimeter of Site 079. Additional soil delineation sampling is proposed to complete delineation north of this location as part of the supplemental RI for Site 153. Honeywell will perform additional soil borings (identified as 153-SB-127 & 128) north of this location, as indicated on revised Figure 2 (attached).

The revised Figure 2 includes soil and groundwater sample results for other sites associated with Study Area 5 (Sites 079, 090, 184) located adjacent to Site 153 for reference purposes, including additional data collected during 2005 and 2006, subsequent to submittal of the RIWP Addendum for Site 153.

6. *Figure 2 (Proposed Soil Boring Locations). It should be noted that shading used to depict building covered sample identification numbers and potentially other pertinent information.*

Honeywell Response:
The Department's comment is noted. Revised Figure 2 is enclosed.

Schedule

Honeywell will incorporate additional investigations requested by the NJDEP, as indicated herein, and provide results in a Remedial Investigation Report (RIR) for Site 153. Regarding a schedule for implementation, Honeywell will submit a schedule following completion of all required access agreements for sampling. Honeywell anticipates that an access agreement will be worked out with the Bayonne Municipal Utilities Authority (BMUA), and Honeywell has also been engaged in discussions with the BMUA regarding the possible acquisition of the property comprising Site 153. Honeywell has been attempting to gain access over the past year for sampling on adjacent property (Langer Transport) to complete proposed delineation sampling along the southern portion of Site 153; however we have been unable to obtain an access agreement from the property owner to date.

Honeywell will provide notification to the NJDEP approximately two (2) weeks prior to field mobilization, along with an updated implementation schedule following completion of required access agreements and other required approvals/permits as indicated in the work plan (e.g., City of Jersey City, NJ Department of Transportation approval for work within the Route 440 right-of-way or median strip).

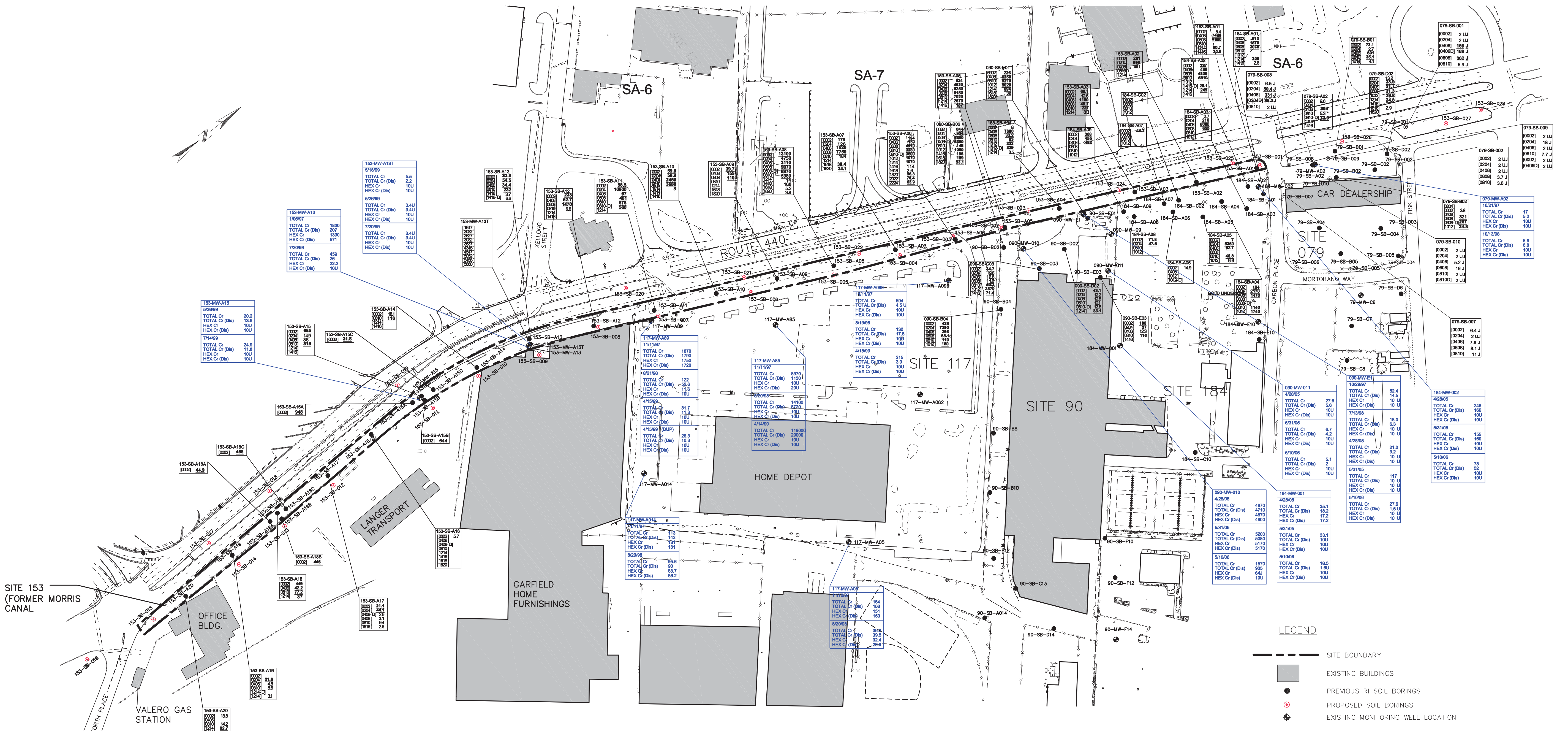
If you have any questions regarding the project, please contact me at (973) 455-3302.

Sincerely,

Maria Kaouris

Maria Kaouris
Manager, Remediation and Evaluation Services
Honeywell International Inc.

cc: John Morris, Honeywell International Inc.
Michael Daneker, Esq., Arnold & Porter LLP
Ed Gaven, MACTEC Engineering and Consulting, Inc.
Brent O'Dell, MACTEC Engineering and Consulting, Inc.
Theodore Toskos, MACTEC Engineering and Consulting, Inc.
Stephen Gallo, Bayonne Municipal Utility Authority (BMUA)
James Monkowski, Hudson Regional Health Commission



LEGEND

SITE BOUNDARY

EXISTING BUILDINGS

PREVIOUS RI SOIL BORINGS

PROPOSED SOIL BORINGS

EXISTING MONITORING WELL LOCATION

SOIL SAMPLE RESULTS IN mg/kg (ppm)

GROUNDWATER SAMPLE RESULTS IN ug/l (ppb) (SHOWN IN BLUE)

SOIL DATA FOR SITE 153 AND OTHER STUDY AREA 5 SITES (SITES 079, 090, 184) FROM RI REPORT DATED NOVEMBER, 1999, PREPARED BY TETRA TECH, INC. ADDITIONAL SOIL DATA FOR SITE 079 COLLECTED DURING 2005 FROM SUPPLEMENTAL RI REPORT DATED JULY 2006, PREPARED BY MACTEC.

BOLD UNDERLINED INDICATES HEXAVALENT CHROMUIM DETECTED ABOVE THE NJDEP MOST STRINGENT SOIL CLEANUP CRITERIA (20 mg/kg) IN SHALLOW FILL ZONE SOILS (0–20 FEET bgs). BLANK SPACE INDICATES HEXAVALENT CHROMIUM WAS NOT DETECTED. SOIL SAMPLE RESULTS ABOVE NJDEP CRITERIA AND GROUNDWATER RESULTS ON ADJACENT STUDY AREA SITES (SITES 079, 090, 184) ARE SHOWN FOR REFERENCE.

REFERENCES:
REMEDIAL INVESTIGATION REPORT FOR STUDY AREA 5 DATED NOVEMBER, 1999, PREPARED BY TETRA TECH; FIGURE 4–3.

SUPPLEMENTAL RI REPORT FOR SITE 079 DATED JULY 2006, PREPARED BY MACTEC; FIGURE 3.

GRAPHIC SCALE

120 0 60 120 240 480

(IN FEET)
1 inch = 120 ft.

MACTEC

FIGURE 2
PROPOSED SOIL BORING LOCATIONS
STUDY AREA 5
SITE 153 - FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY

PROJ. NO.	3480050143	DATE 9/14/06	REV.
DWG. NO.			

From: Frank Faranca [mailto:Frank.Faranca@dep.state.nj.us]
Sent: Wednesday, April 08, 2009 3:05 PM
To: Kaouris, Maria
Cc: David Doyle; David VanEck
Subject: RE: Document Priority - Morris Canal RIWP

Maria,
Your proposal to finish delineation is approved. Please continue with the remedial investigation until full delineation is achieved.
Thank you.
Frank

Frank Faranca, CHMM
Site Remediation Technical Specialist
NJDEP/ Bureau of Case Management
401 East State Street
P.O. Box 028
Trenton, NJ 08625-0028
Phone: 609-984-4071
Fax: 609-633-1439
e-mail: Frank.Faranca@dep.state.nj.us

>>> "Kaouris, Maria" <Maria.Kaouris@Honeywell.com> 4/8/2009 12:09 PM >>>

Frank,

Please see attached. This includes your comments and our responses to them.

Thanks much,

State of New Jersey
Department of Environmental Protection
Site Remediation Program
Mailcode 401-06
P.O. Box 420
Trenton, NJ 08625-0420

CHRIS CHRISTIE
Governor
KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

Maria Kaouris, Remediation Manager
Honeywell International, Inc.
101 Columbia Road
Morristown, New Jersey 07962

Date: February 16, 2012

Approval

Re: Classification Exception Area
Study Areas 5, 6 and 7
Hudson County Chromate Sites 73, 87, 88, 90, 115, 117, 120, 124, 125, 134, 140, 153, 157, and 184
Jersey City, Hudson County
NJDEP PI # G000008789

Dear Ms. Kaouris:

The New Jersey Department of Environmental Protection (NJDEP) has reviewed the Groundwater Classification Exception Area (CEA) application dated 8 June 2009, prepared by HydroQual, Inc. The NJDEP has determined that the referenced document is in compliance with Section 7:26E-8.3 of the New Jersey Technical Requirements for Site Remediation, and the CEA Guidance Document (revised November 1998). NJDEP hereby approves the CEA request effective the date of this letter.

Honeywell is advised that the CEA does not specify monitoring requirements since it functions as a notification mechanism, not as a "stand alone" enforcement or regulatory document. The need and the extent of ground water monitoring required during the duration of the CEA will be determined as part of the Comprehensive Ground Water Monitoring Program. As specified in NJAC 7:26E-8.3(b)5, the Department will require Honeywell to notify external agencies/affected parties of the CEA designations according to the guidelines established in the CEA Guidance Document (11/98) which can be located at: http://www.nj.gov/dep/srp/guidance/cea/ceaguid2.pdf. Note that all property owners within the plume do not need to be notified as long as they are on public water. Honeywell must also comply with the Biennial Certification requirements at NJAC 7:26E-8.6.

The CEAs are for the ground water contamination in three distinct water bearing zones (Shallow, Deep Overburden, and Bedrock). Since the aerial extent of contamination is different for each of the three zones, three separate CEAs were prepared. Note that these

CEAs are only for total and hexavalent chromium. Any other ground water contamination areas within or nearby (e.g. organic compounds in Study Area 6 – North) will require a separate CEA.

If you have any questions, please contact Thomas J. Cozzi of the Site Remediation Program at (609) 984-2905.

Sincerely,

Thomas J. Cozzi, Assistant Director
NJDEP Site Remediation

C: Barbara A. Netchert, Hudson County Clerk
Hudson County Regional Health Commission (CEHA)
Robert Byrne, RMC, Jersey City Clerk
Robert Vogt, Jersey City Division of Health
Carol Ann Wilson, Hudson County Department of Health & Human Services
Stephen D. Marks PP, AICP, Hudson County Division of Planning
Bureau Chief, NJDEP Bureau of Safe Drinking Water
Bureau Chief, NJDEP Bureau of Water Systems and Well Permitting
David Doyle, NJDEP-SRP
David Van Eck, NJDEP-BGWPA

APPENDIX B

SITE HISTORY DOCUMENTATION

Site History Summary
Review of Historical Aerial Photographs and Maps
Study Area 5 Site 153 – Former Morris Canal Site
Along Route 440 between Danforth Avenue and Carbon Place,
Jersey City, New Jersey

Historical aerial photographs and maps were reviewed to document Site history and property development. Because the Site consists of a narrow strip of land (approximately 3,200 feet long by 25 feet wide) formerly used as canal and subsequently used as a utility easement, no building structures existed on the Site property.

Aerial Photographs

1930: The land in the area of the Site appears mostly undeveloped. The only visible structures to the west of the Site are the Kellogg factory buildings on Droyer's Point. To the east of the Site, visible structures include the Chicago Railways building and Mallinckrodt Chemical Works on Site 184, the Ryerson warehouse (later Baldwin Steel) on Site 090, and Mutual Chemical buildings on Site 117.

1940 & 1944: These photographs indicate similar conditions as 1933, but the higher resolution shows the highway (Route 440; former Route 9W as indicated on historical maps) more clearly defined. Roosevelt Stadium is visible on Droyer's Point and there appears to be land disturbances to the west around the current SA-6 and SA-7 sites.

1951: More development is present on all of the surrounding properties. Carbon Place is now visible north of the Site and there are several more buildings at the Mallinckrodt Chemical Works to the east. The first buildings along Kellogg Street (SA-6 South) are now visible to the west.

1953: Similar conditions as the 1951 aerial photograph, with another Ryerson Steel building visible on Site 117 and the current Langer Transport building is visible east of the Site.

1957 & 1958: There is more development to the west of the Site, including the Roosevelt Drive-In (SA-7 location) and several buildings and tank structures (wastewater treatment tanks/sedimentation basin) on the SA-6 North site.

1959: No significant changes were noted compared to the 1957 and 1958 photographs.

1961: There is more development along Kellogg Street at SA-6 South, including buildings on Sites 125 (Delphic Consolidated) and Site 140 (ABF Trucking) which are both surrounded by truck trailers.

1962: No significant changes were noted compared to the 1961 photograph.

1966: Several changes along Route 440 are noted including jug-handles at Kellogg Street and entrance to Roosevelt Stadium. Additional structures are present west of the Site where SA-6 North is located.

1970: This photograph indicates similar conditions at the Site and surrounding area as 1966.

1979: The only new structure near the Site appears is the current warehouse building (former Garfield Furniture) east of the Site and just north of Langer Transport. The Kellogg factory on Droyer's Point is no longer present and the area appears to be under construction.

1989: Stadium Plaza shopping center is now visible on Droyer's Point (on the site of the former Kellogg factory) and Roosevelt Stadium area to the south has been cleared.

1995: This photograph has very low resolution. The only notable difference is that the Roosevelt Stadium area on Droyer's Point has been redeveloped.

Sanborn Fire Insurance Maps

From 1898 through 1912, the Site is occupied by the Morris Canal and tow path; a spoil bank is shown north of the canal in 1898 and is not shown in 1912. By 1950 the Morris Canal and tow path are no longer present and by 1979 the Site is identified as N.J. State Highway 440. A summary of historical Sanborn Fire Insurance Maps follows:

1898: The map shows the Morris Canal, and tow path and spoil bank west of the canal. The only adjacent development appears to be on Site 184, which is occupied by several buildings identified as Mallinckrodt Chemical Co. in the western portion of Site 184.

1912: The map shows the Morris Canal and tow path. The spoil bank noted in the 1898 map is no longer present. To the east of the Site, Carbon Place appears to be a private road and a building identified as Chicago Railway occupies the eastern portion of Site 184, with a railroad spur in the area between the building and West Side Avenue. Site 117 is now occupied by several Mutual Chemical buildings and railroad spurs.

1950: The Morris Canal and tow path are no longer shown. Highway 9W is shown in area of current Route 440. The entire Site 184 is occupied by Mallinckrodt Chemical Co., with additional buildings compared to previous maps and expansion into the building previously occupied by Chicago Railway Co. Site 90 is occupied by Ryerson Steel warehouse. To the west of the Site, the Kellogg factory and Roosevelt Stadium are shown on Droyer's Point.

1979: The highway is now identified as N.J. State Highway 440. To the east of the Site, the Mutual Chemical Co. buildings are no longer present and a small truck repair building is present on the western portion of the property. To the west, SA-6 North is occupied by the Jersey City Sewage Treatment Plant and Jersey City Department of Public Works Garage and Maintenance Facility. The area along Kellogg Street (SA-6 South location) is developed, and the Kellogg factory has been replaced by the current Stadium Plaza Shopping Center.

1988: The only significant change to adjacent properties is that Roosevelt Stadium is no longer present.

1991: The only significant change to adjacent properties is that the former Roosevelt Stadium location is now occupied by the Society Hill development.

1994: No major changes are apparent compared to 1991, except that the Ryerson Steel building on Site 90 is now identified as Baldwin Steel.

1995: No major changes are apparent compared to 994.

Topographic Maps

Historical topographic maps (dated 1891, 1900, 1905, 1947, 1955, 1967 and 1981) were reviewed to provide additional information on Site history.

1900 & 1905: The area of the Site is undeveloped and appears to be marshland, which extends to the edge of the former canal area (near eastern side of current Route 440).

1947: A multi-lane highway (current Route 440) is present and the surrounding region is developed. The bulkhead is in place along the Hackensack River at Droyer's Point and along the shoreline to the north.

1955: Route 440 appears to be a four-lane highway, with more developed in the surrounding area. The SA-7 site location is identified as the Drive-In Theater and the SA-6 North location is identified as Sewage Disposal.

1967: The Site area appears unchanged, and there appears to be substantially more development along Kellogg Street.

1981: The Site area appears unchanged. New building footprints include the Garfield Furniture building to the east and the Stadium Plaza Shopping Center to the west.

Topographic Survey of the Morris Canal Property - 1923

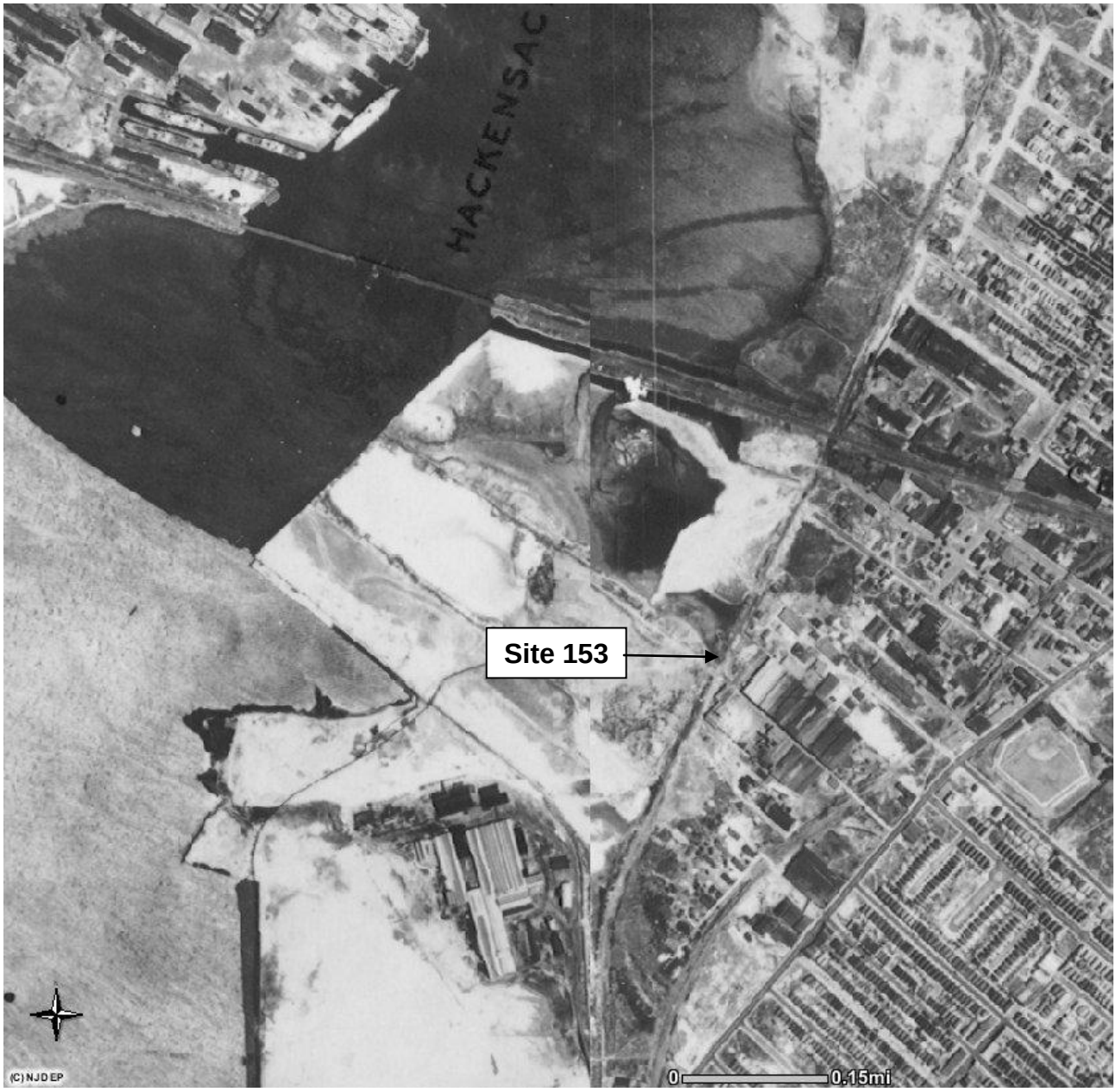
A Topographic Survey of the Morris Canal Property dated 1923; Office of Chief Engineer, L.V.R.R. was reviewed. The 1923 date indicates that the map was prepared just prior to the time of closure and filling of the canal. Based on the survey map, the width of the canal ranges from approximately 25 to 40 feet in the area of SA-5 and a 30-inch diameter water line (running parallel to the canal) is shown in the area west of the canal. The land next to the canal is identified as Mutual Chemical Co. and Joseph T. Ryerson & Son, and a narrow area labeled "ash dump" is shown west of the canal. In the area near Danforth Avenue, a facility identified as Cochrane Chemical Co. is shown east of the canal along Danforth Avenue.

Hopkins Atlas - 1928

The 1928 Hopkins Map shows canal identified as Lehigh Valley R.R. Jersey City Branch (Old Morris Canal). The land east of the canal in the area of SA-5 is identified as being occupied by Unexcelled Manufacturing Co., Mutual Chemical Co., Joseph T. Ryerson & Sons, Inc., and Mallinckrodt Chemical Co. There is a linear feature shown west of the canal (in the area of current roadway). The land to the west of the canal is shown as being filled as the bulkhead line is in place along the Hackensack River.

APPENDIX B-1

AERIAL PHOTOS

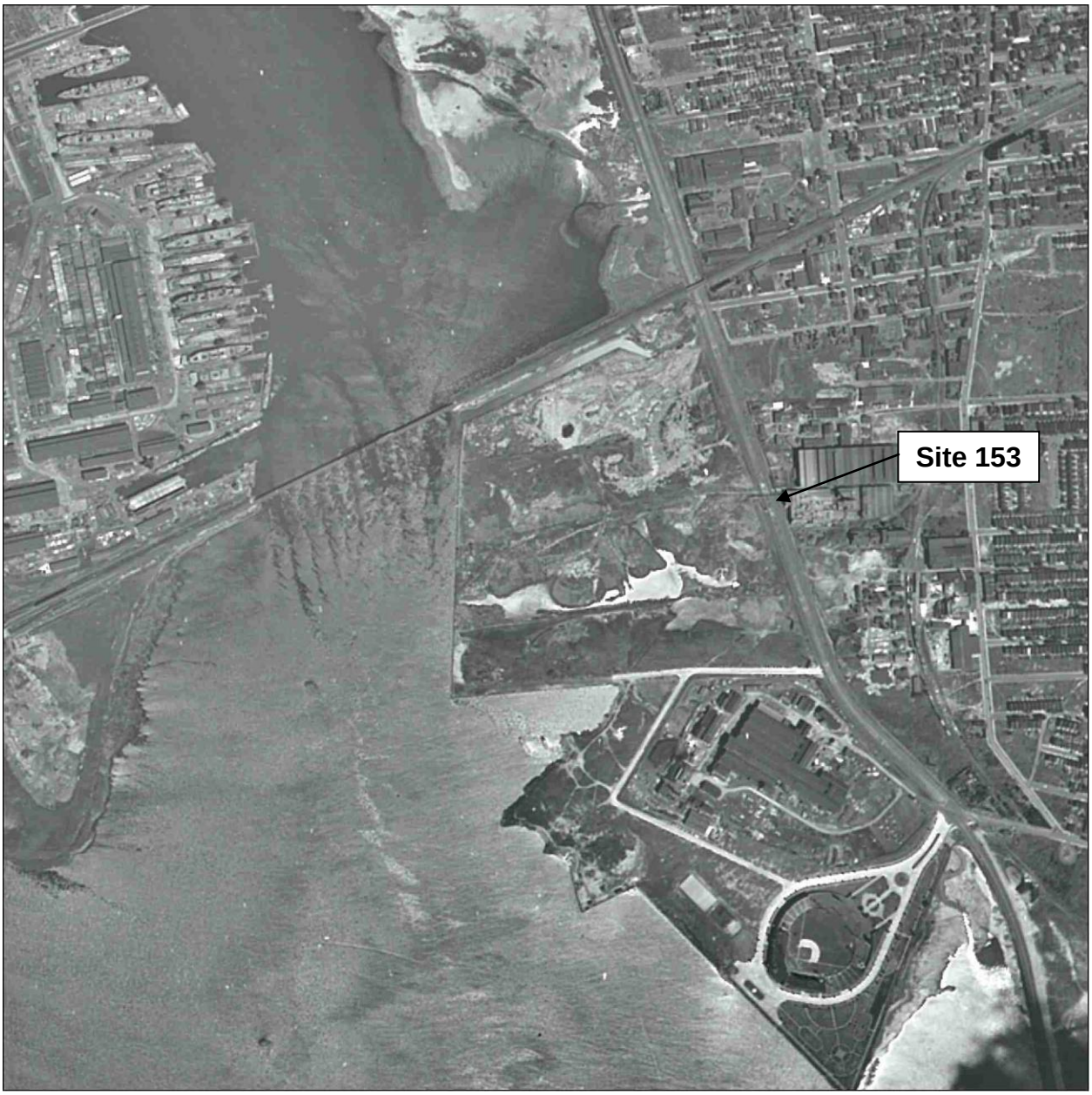


Aerial Photograph (circa 1930)

Source: New Jersey Department of Environmental Protection (NJDEP), Office of Information Resources Management (ORIM), Bureau of Geographic Information Systems (BGIS).

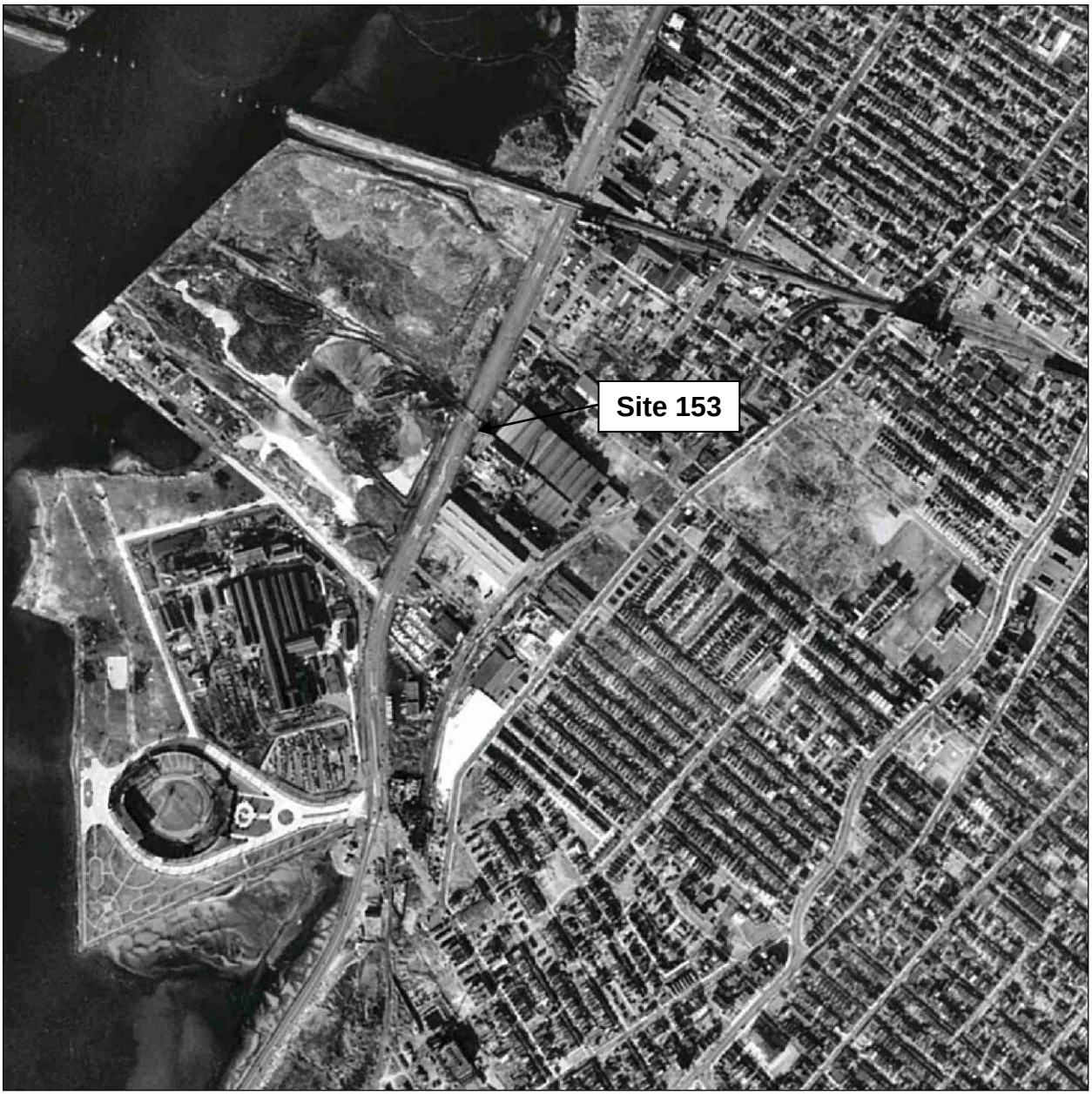
This (map/publication/report) was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by the NJDEP.

Aerial Photograph 1940

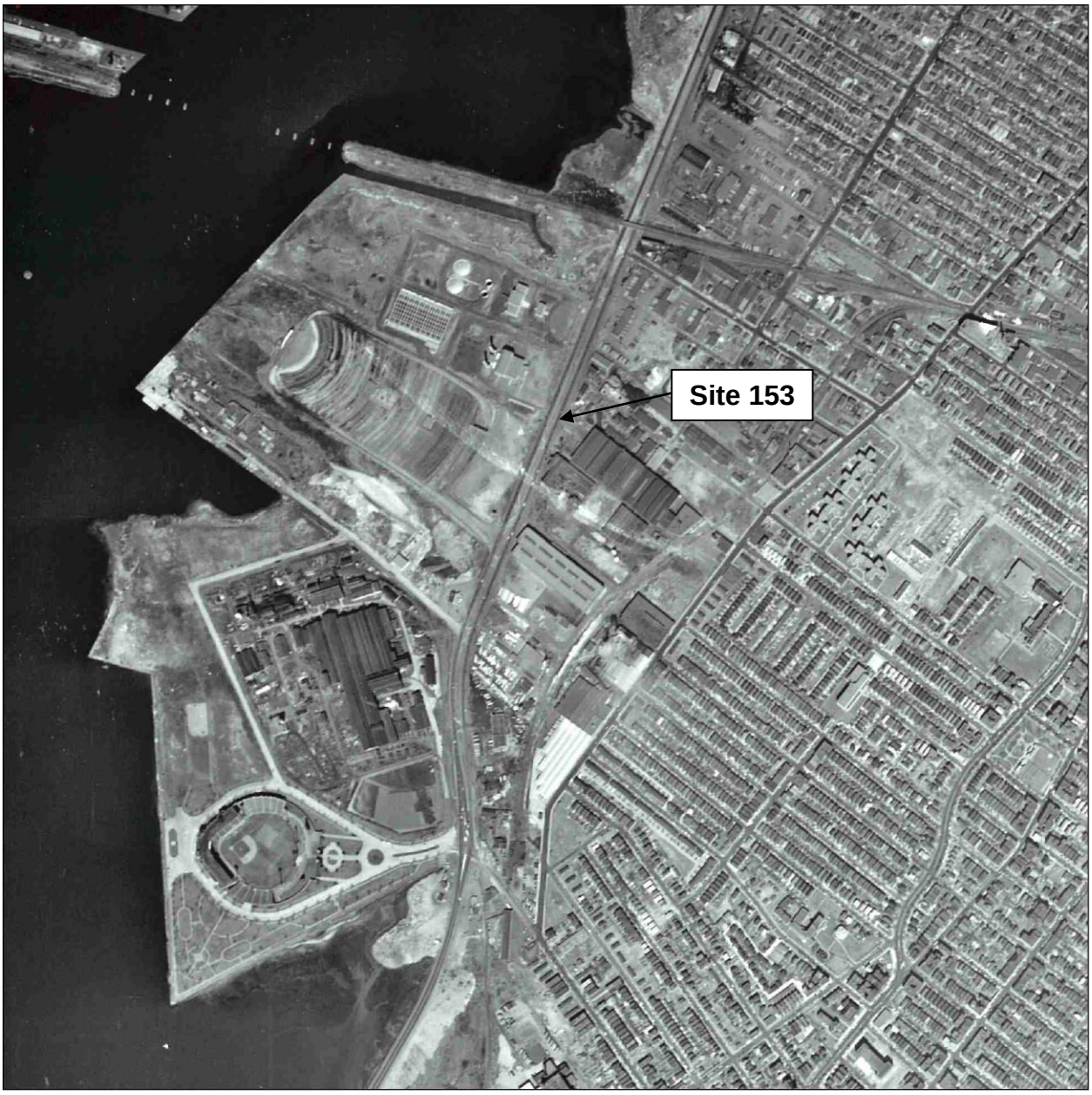


Aerial Photograph 1944

Aerial Photograph 1951

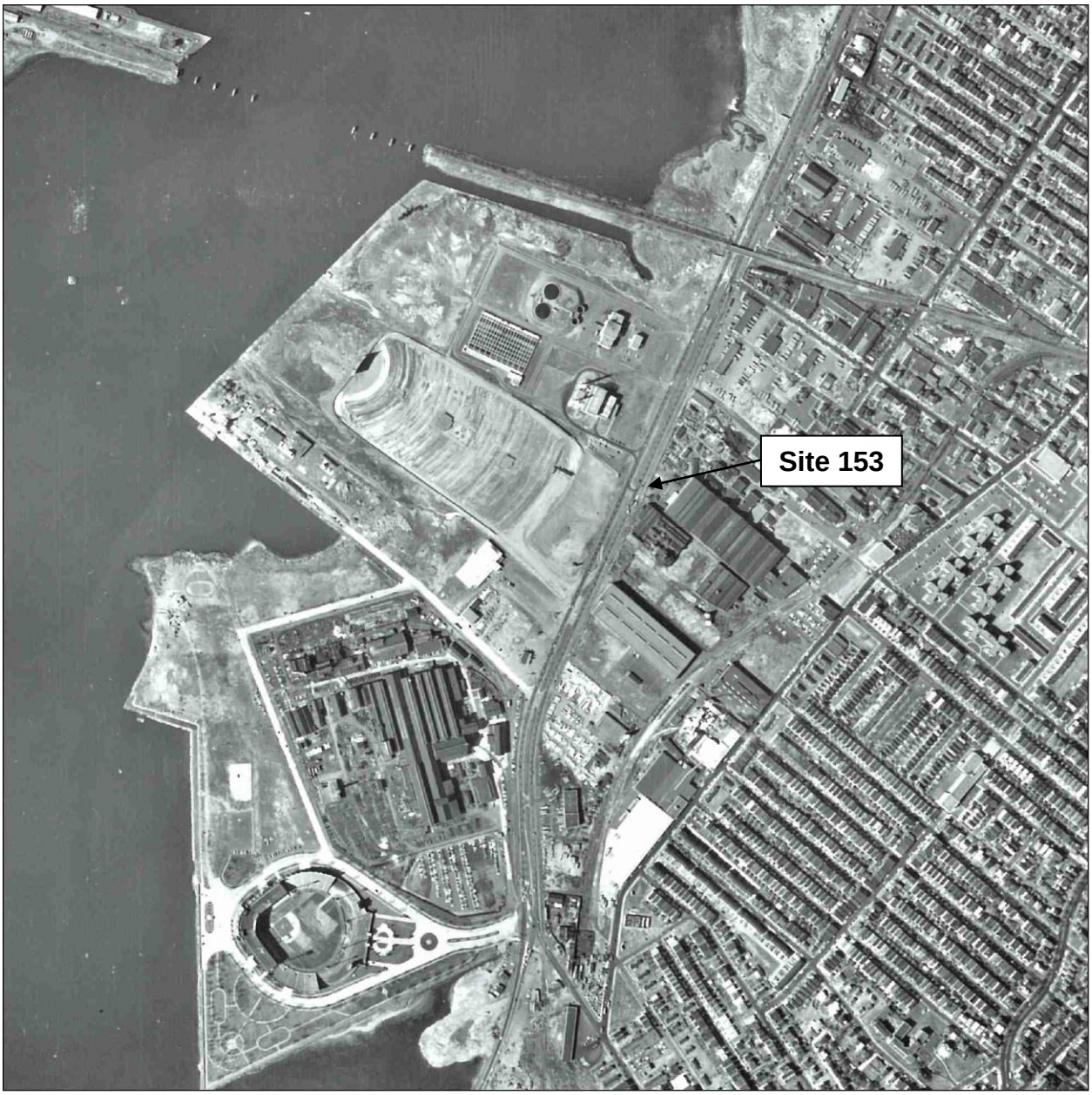


Aerial Photograph 1953



Aerial Photograph 1957

Aerial Photograph 1958



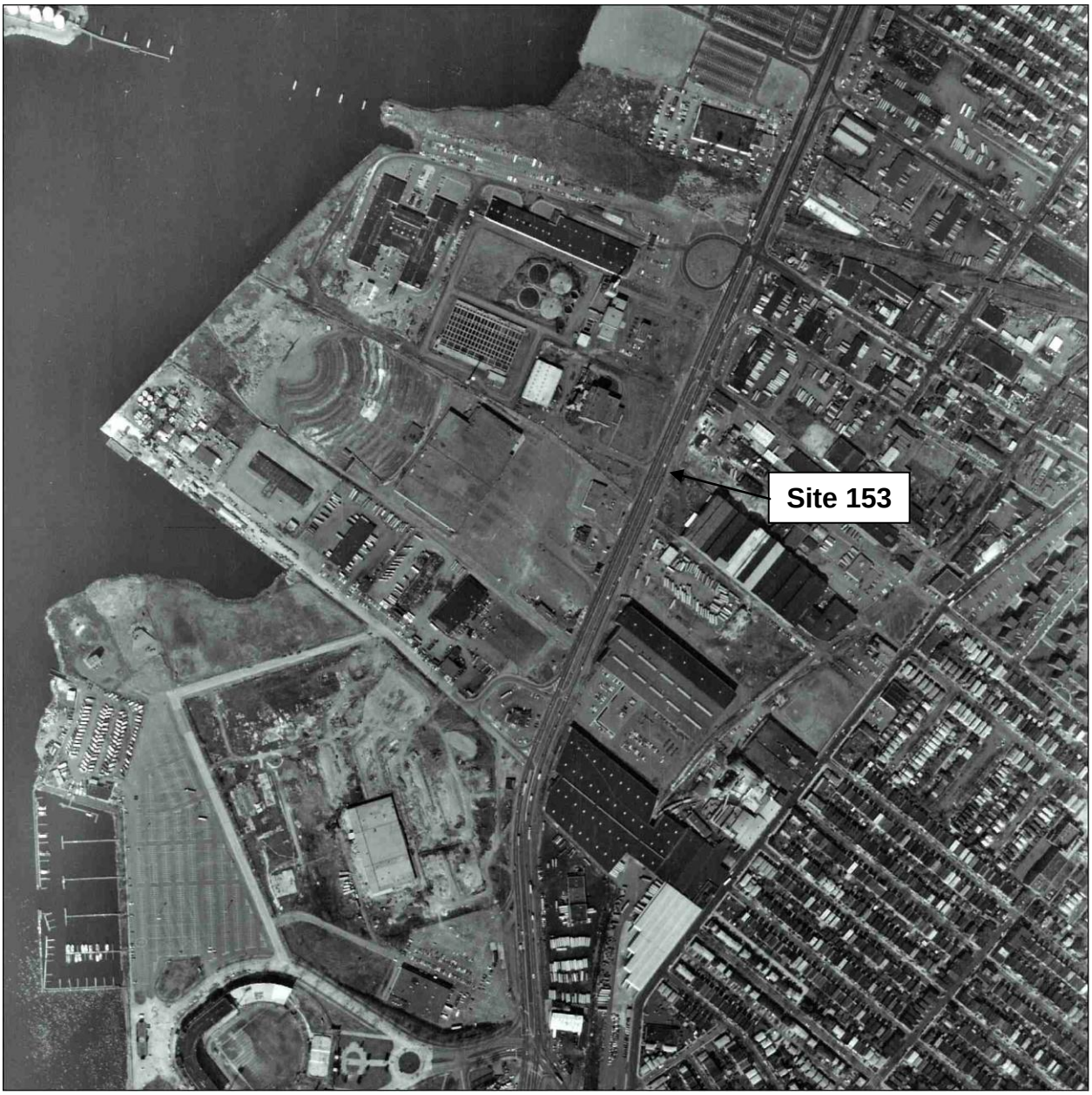
Aerial Photograph 1959

Aerial Photograph 1961

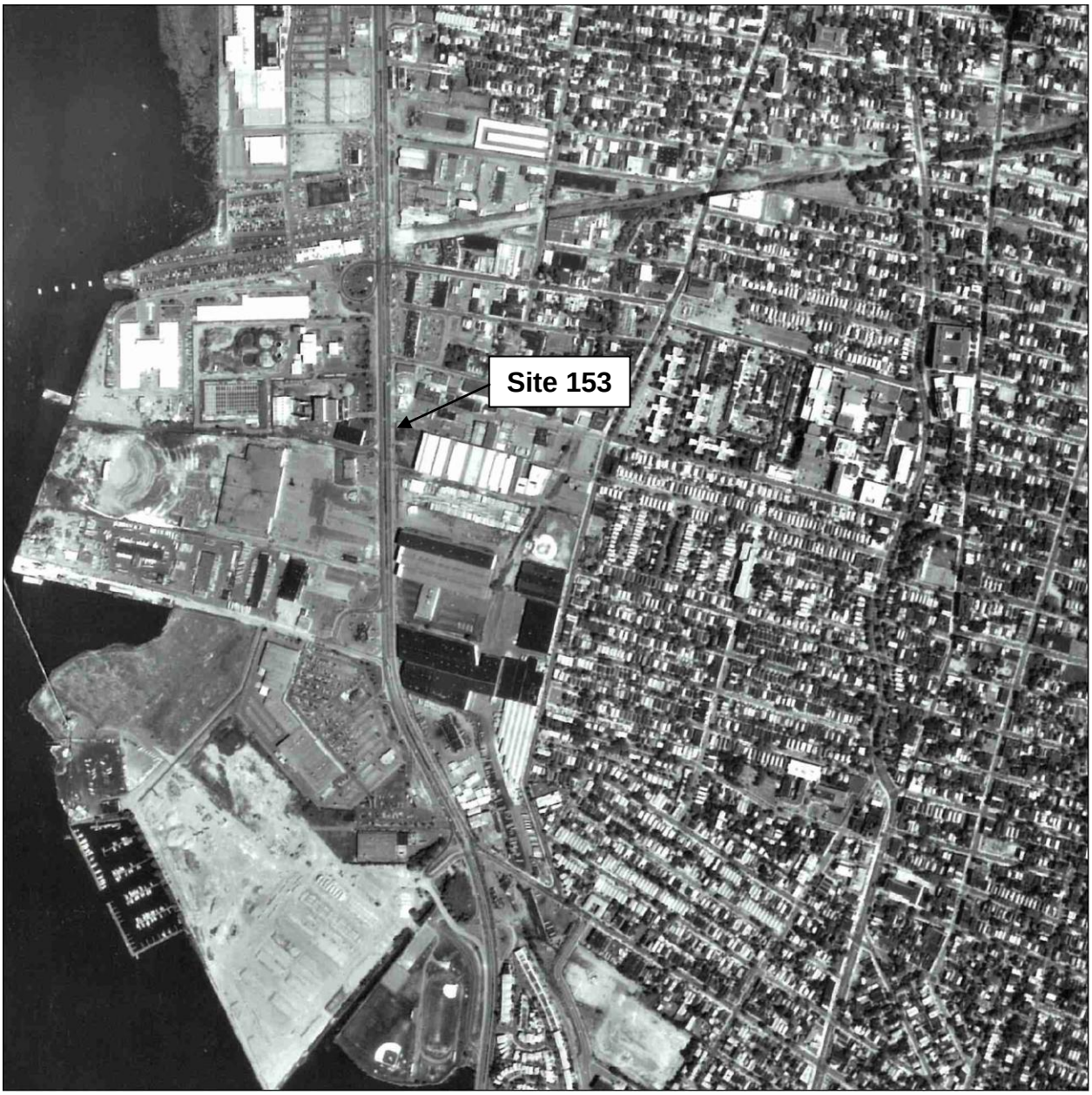
Aerial Photograph 1962

Aerial Photograph 1966

Aerial Photograph 1970



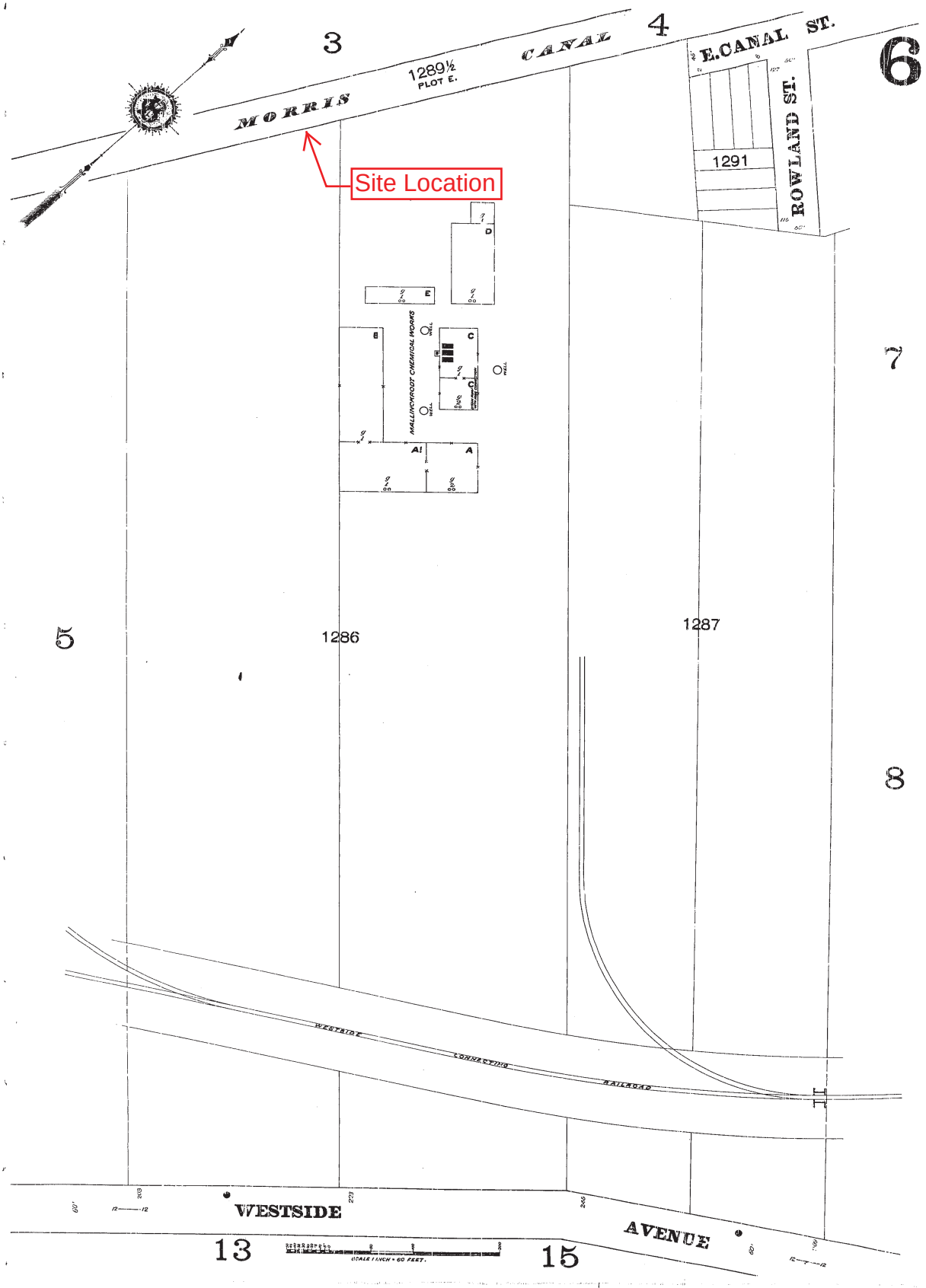
Aerial Photograph 1979



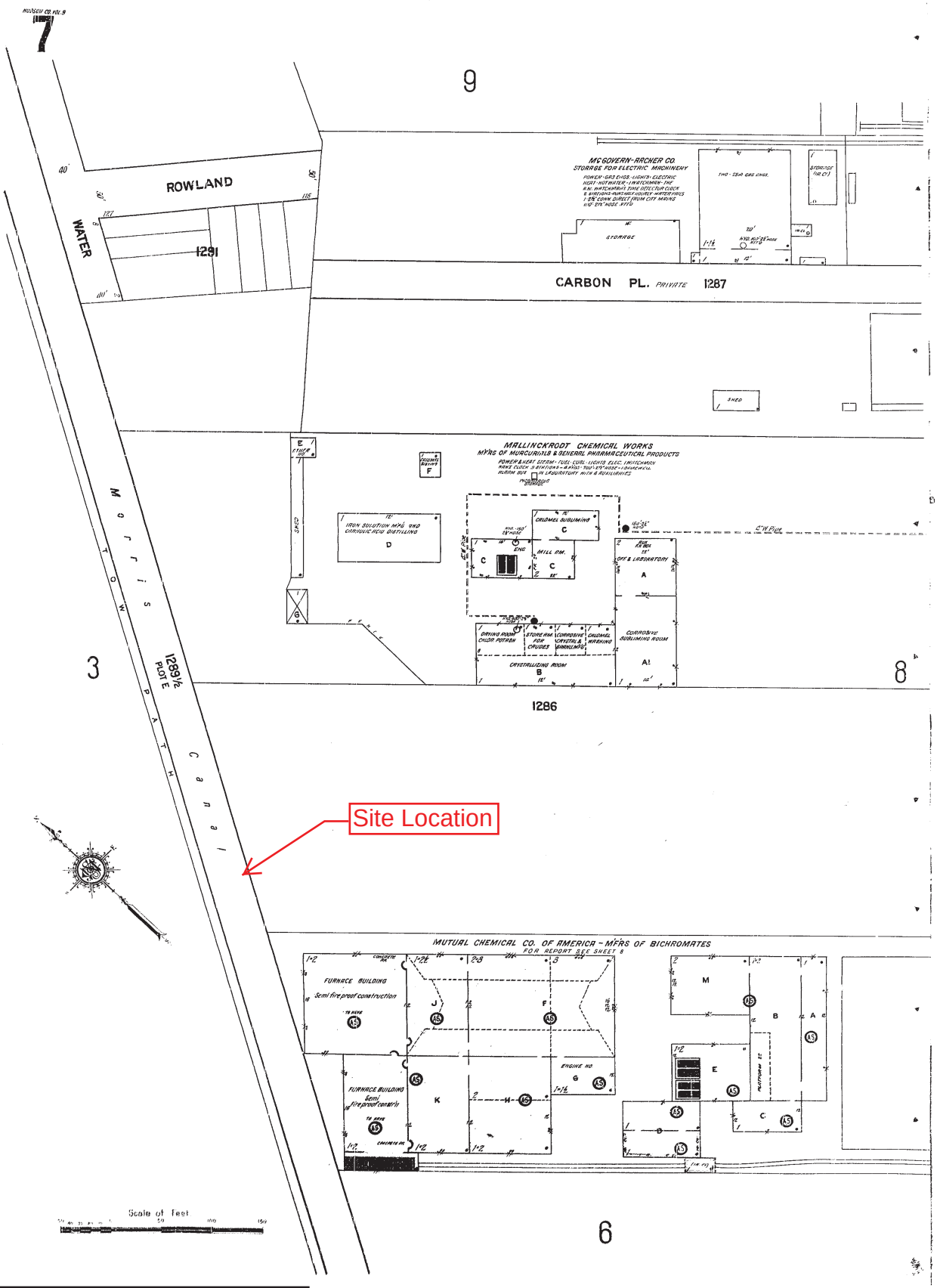
Aerial Photograph 1989

APPENDIX B-2

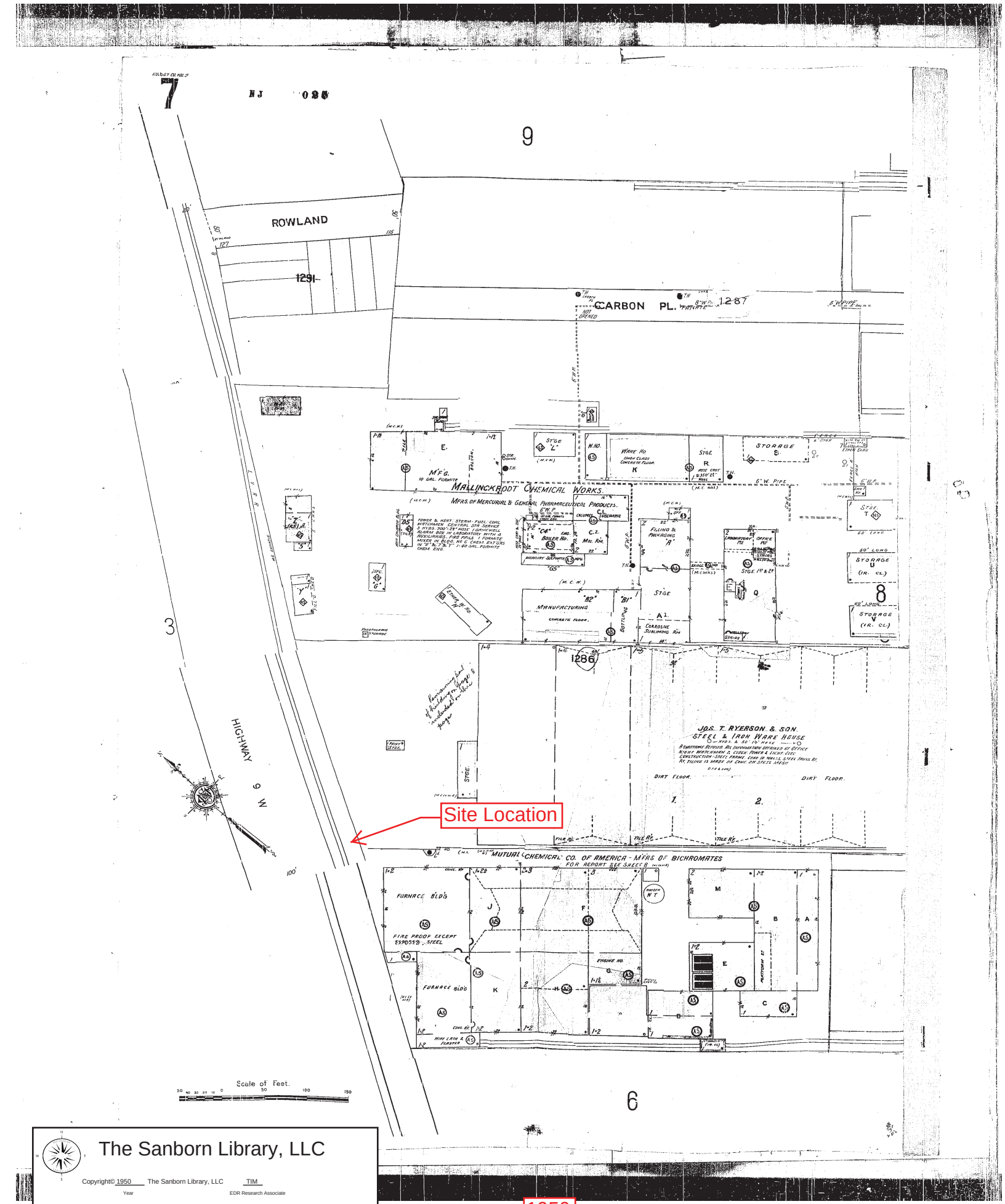
SANBORN MAPS



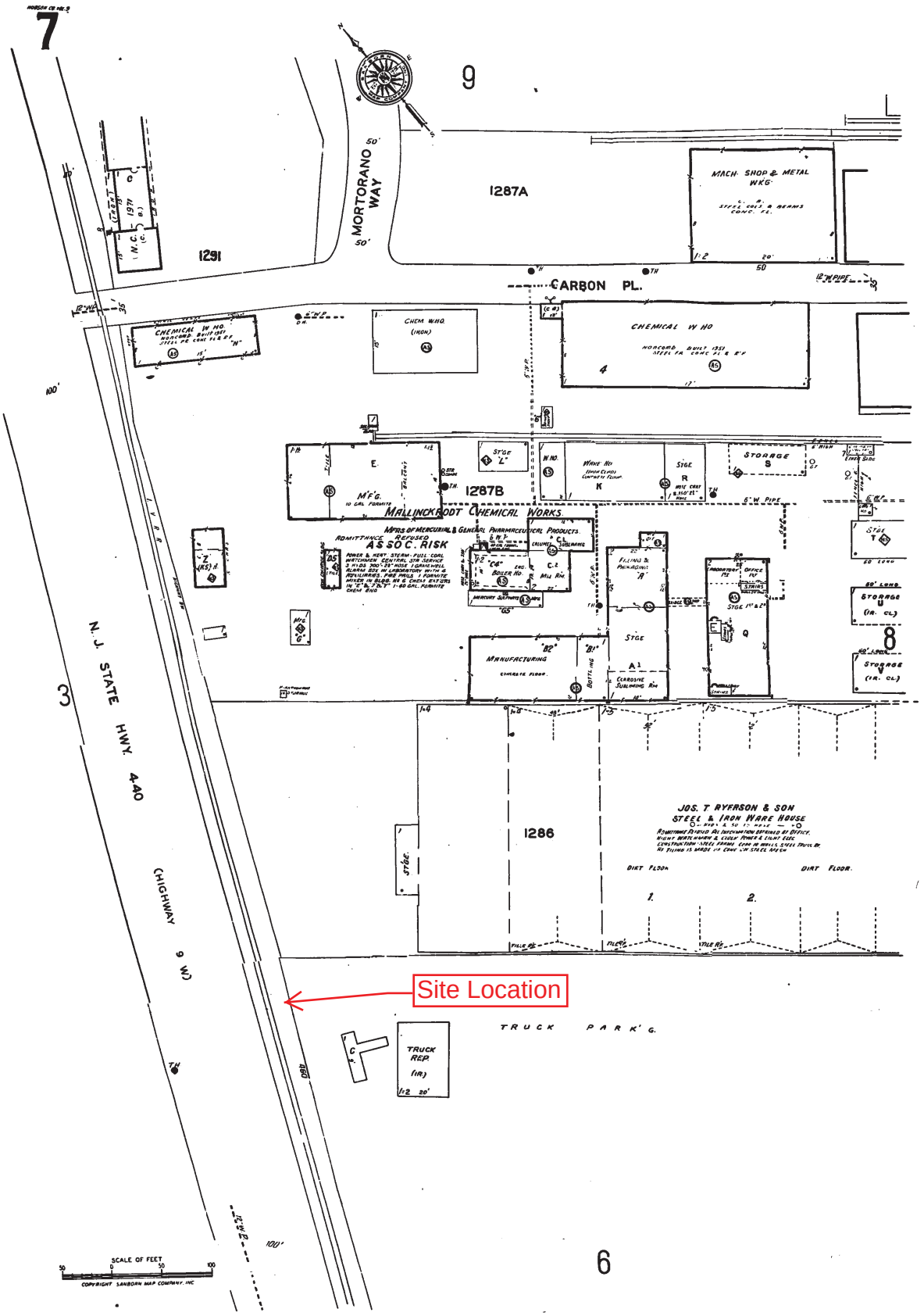
1898



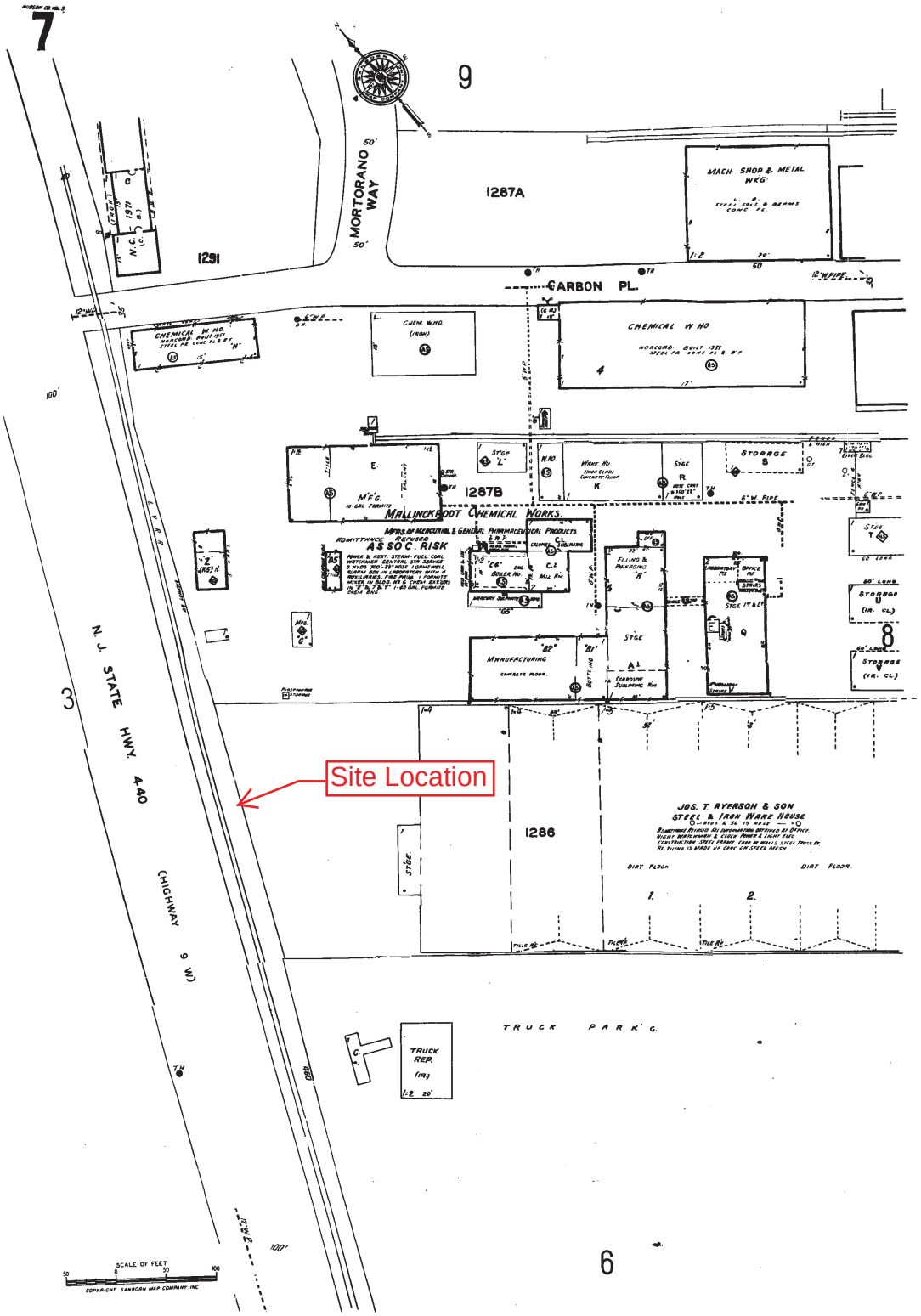
1912



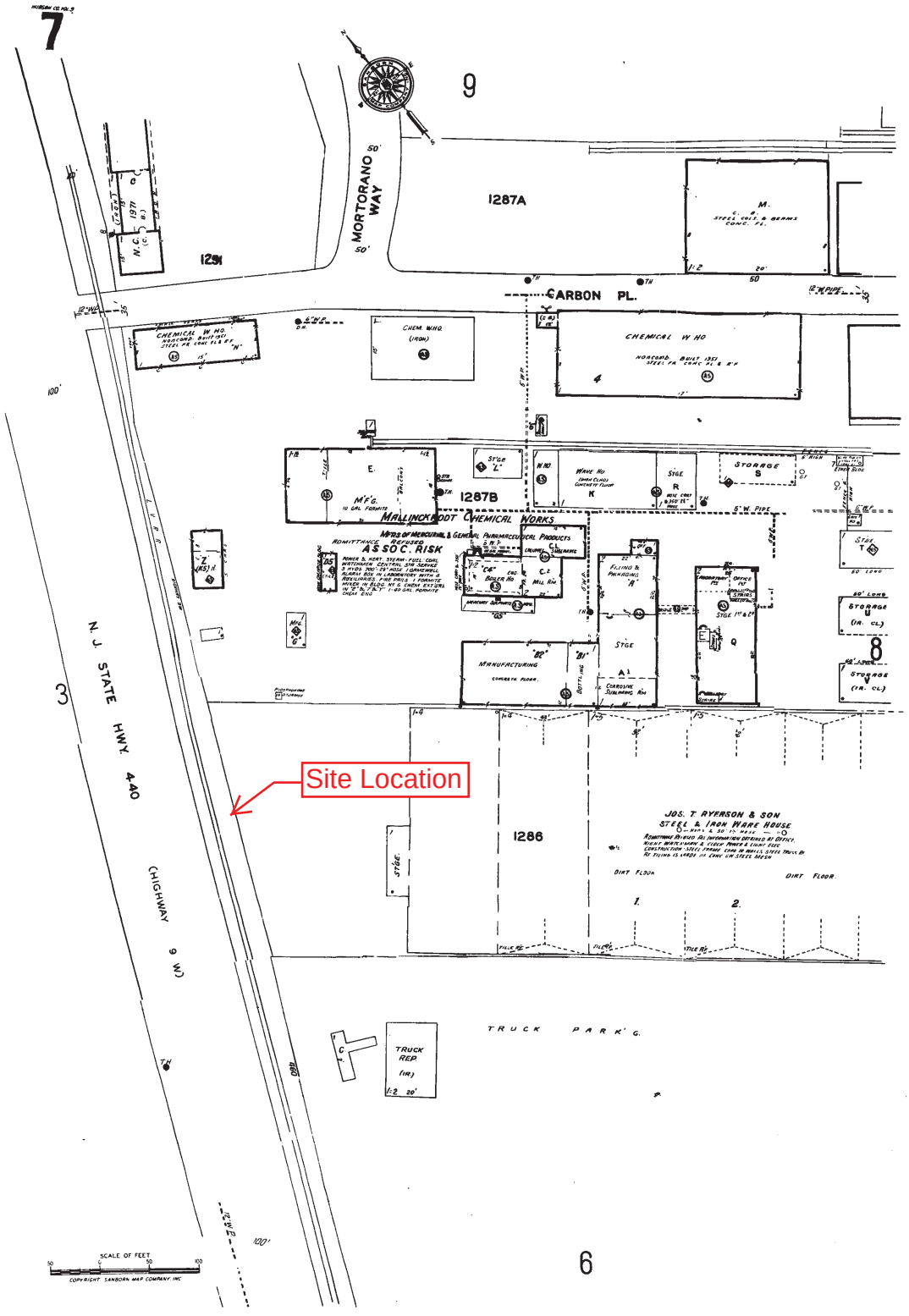
1950



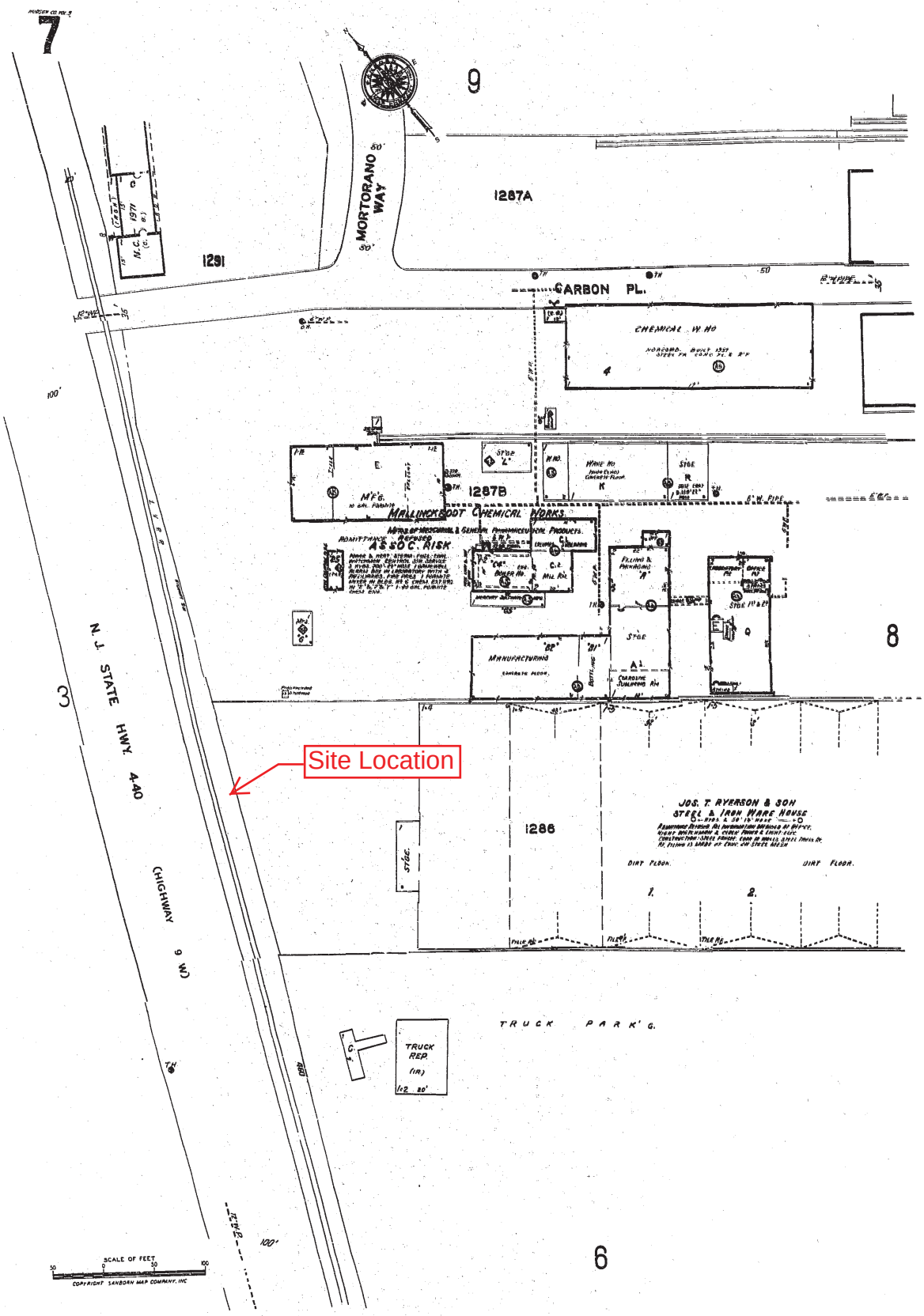
1979



1988

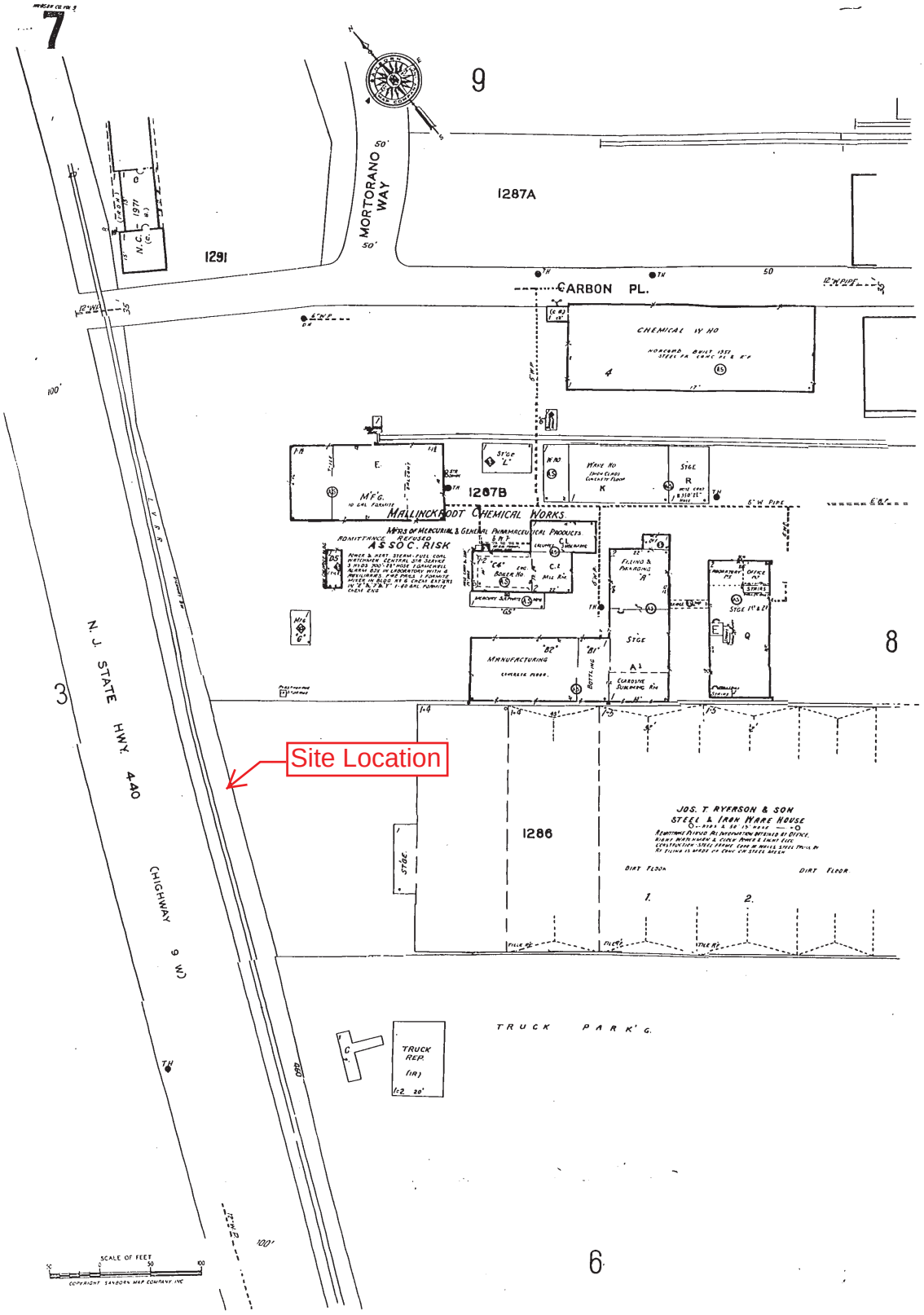


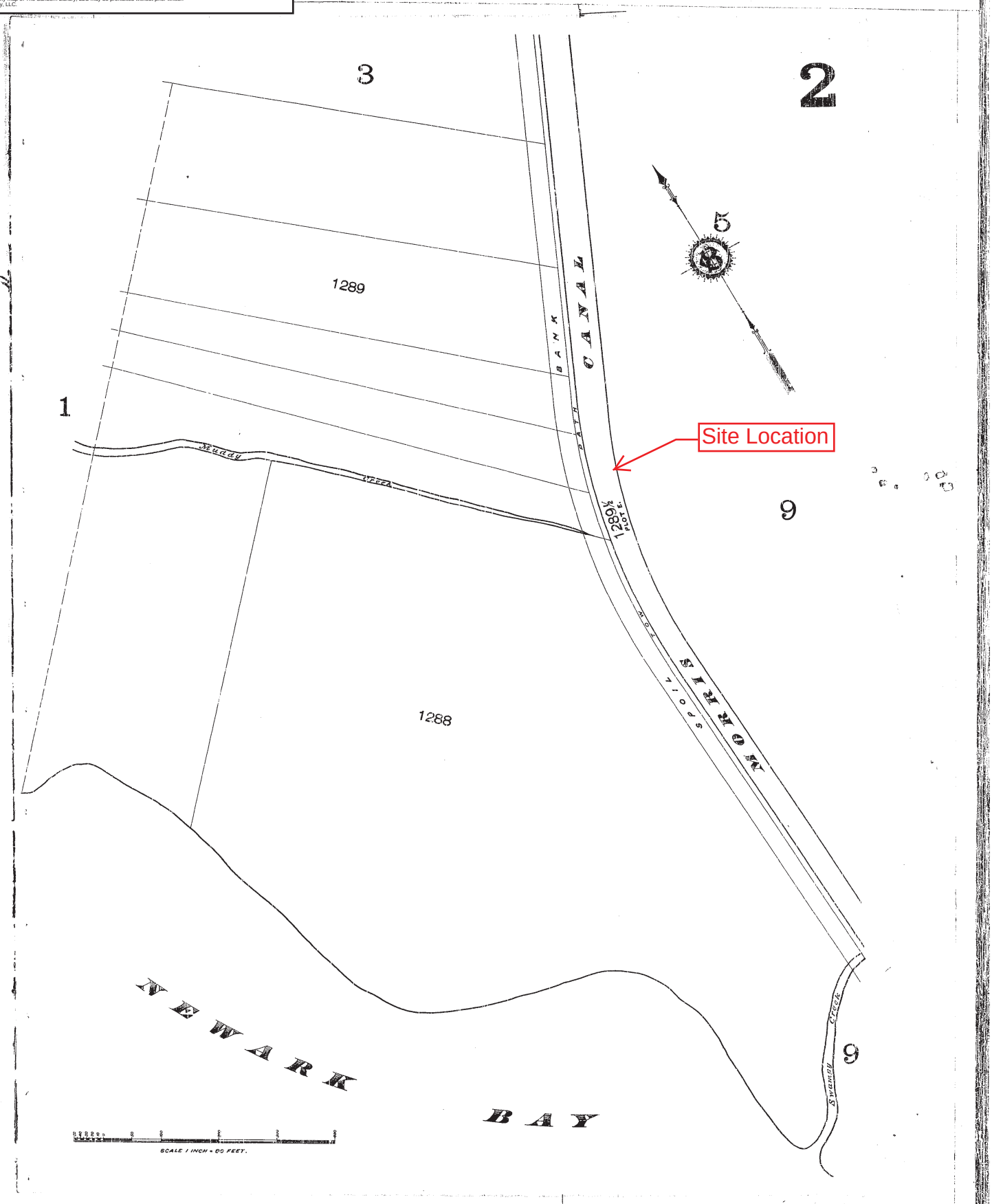
1991



The Sanborn Library, LLC

1994





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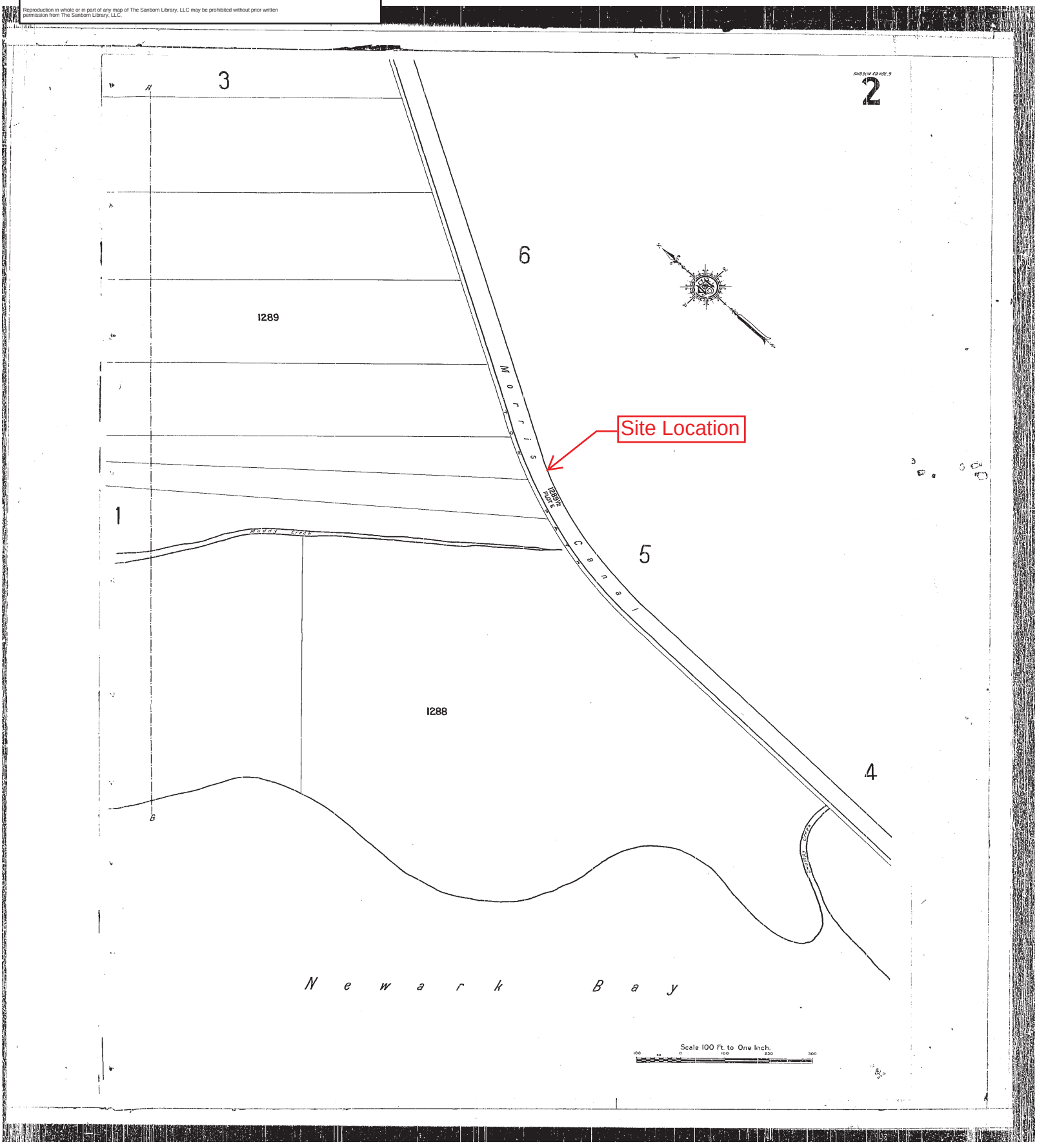

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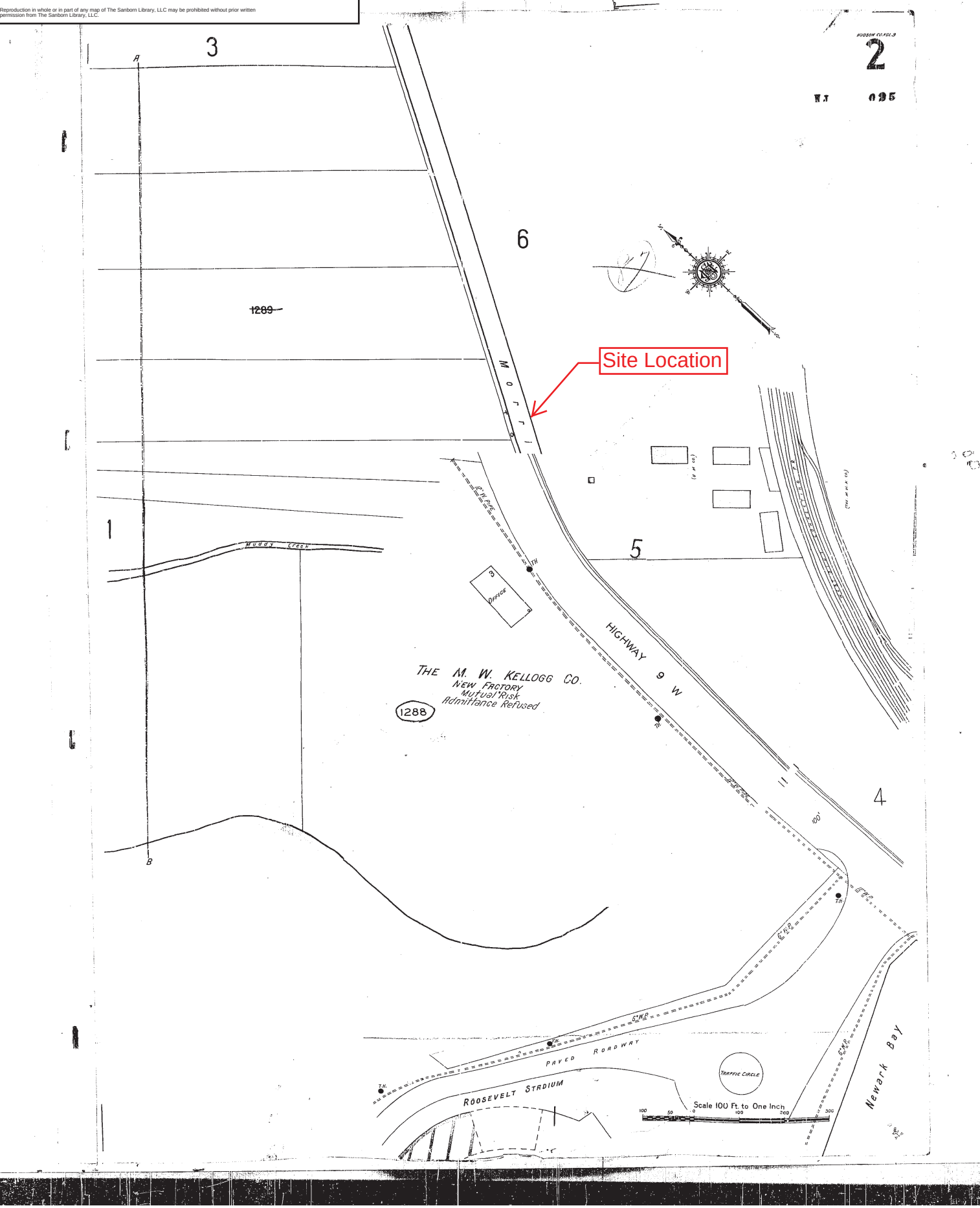
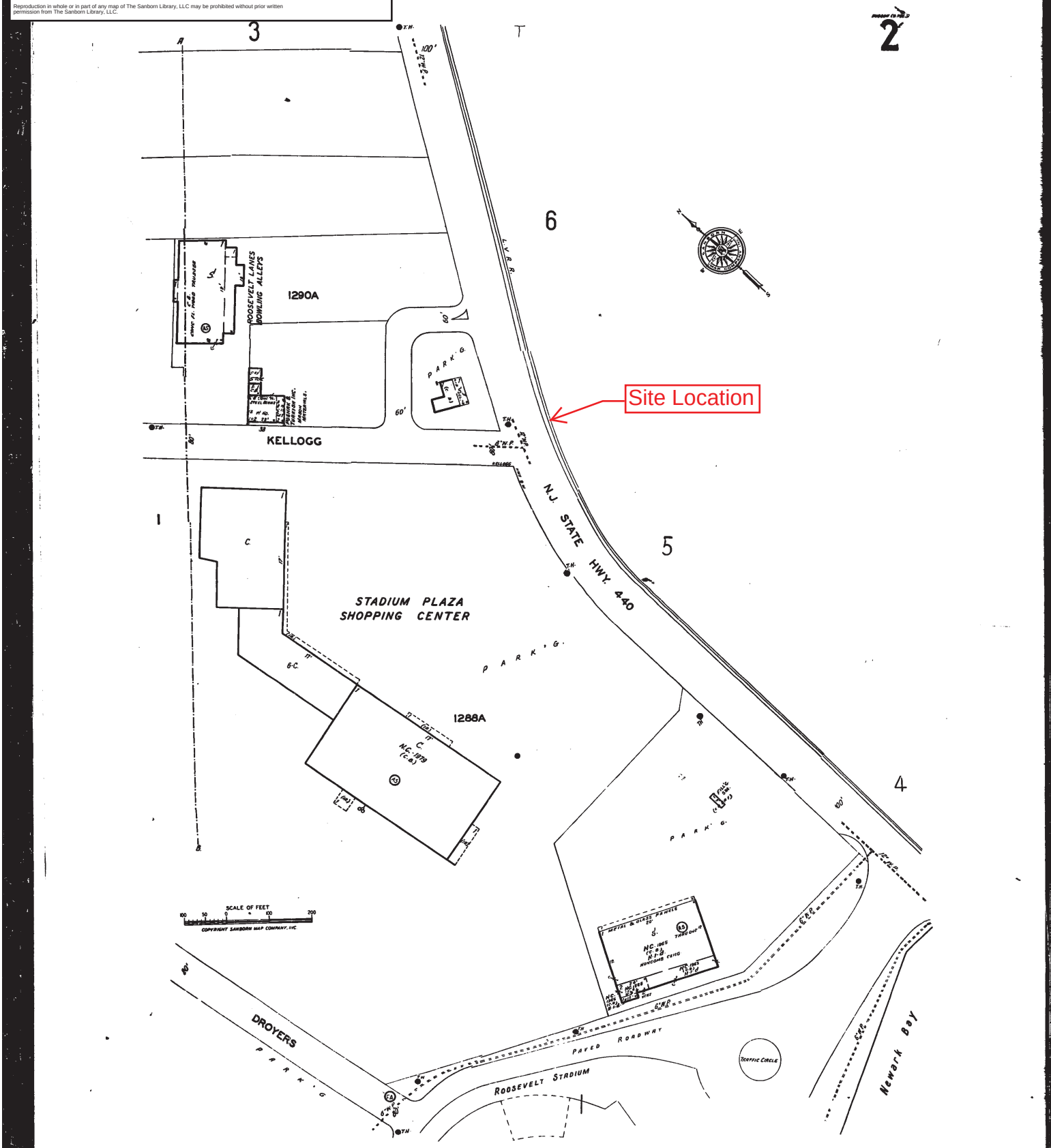
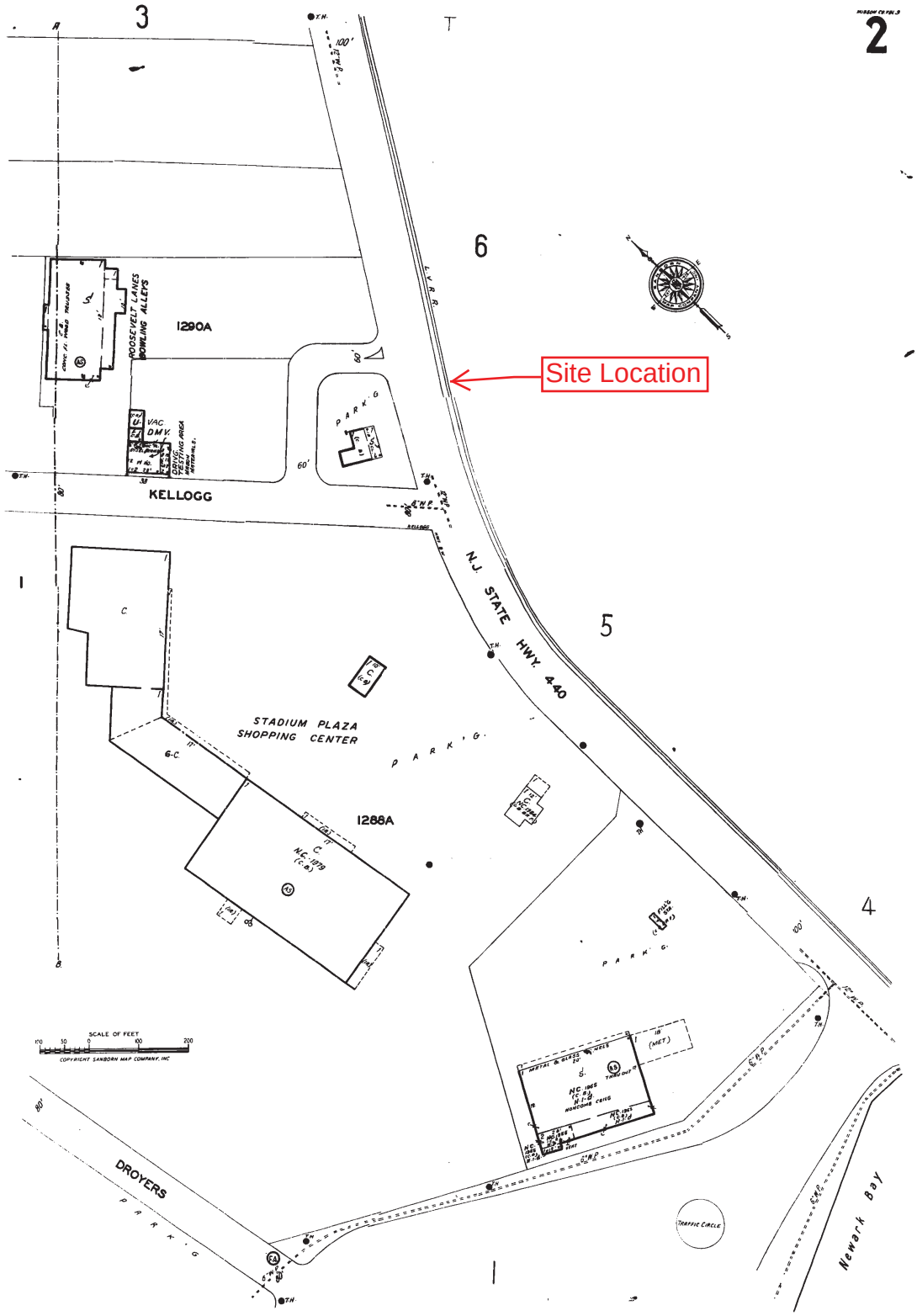


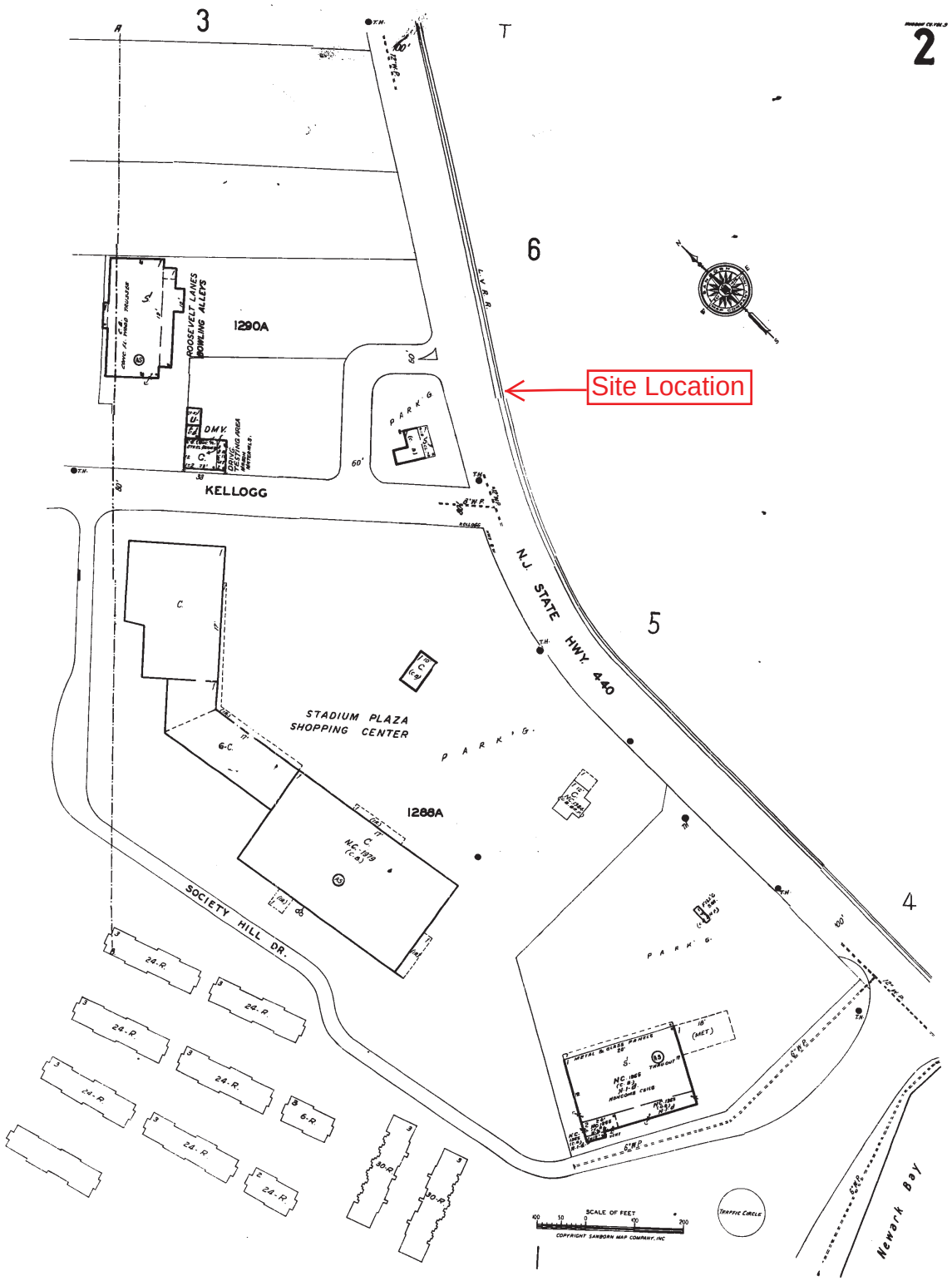
1950



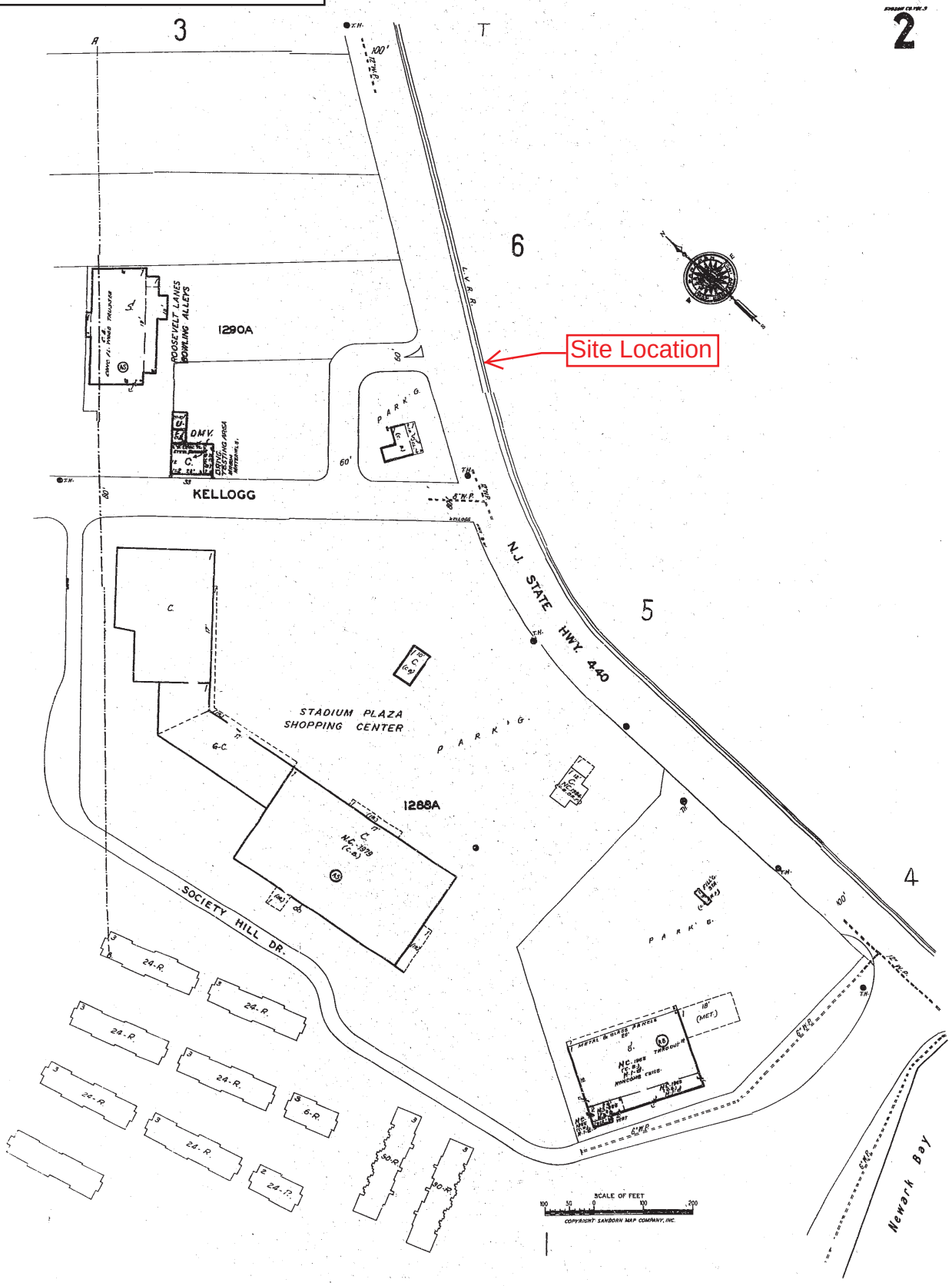
1979



1988



1991



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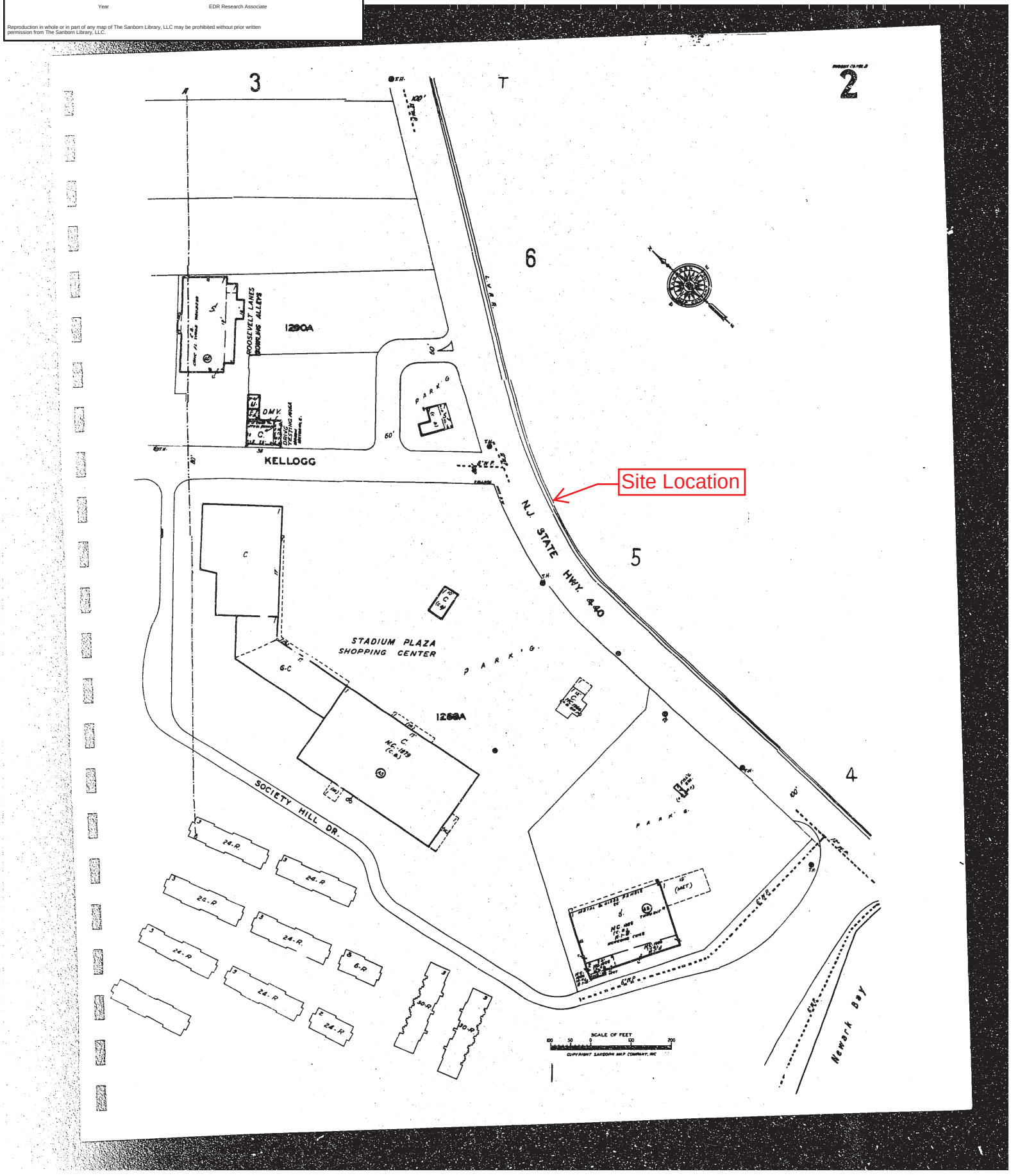

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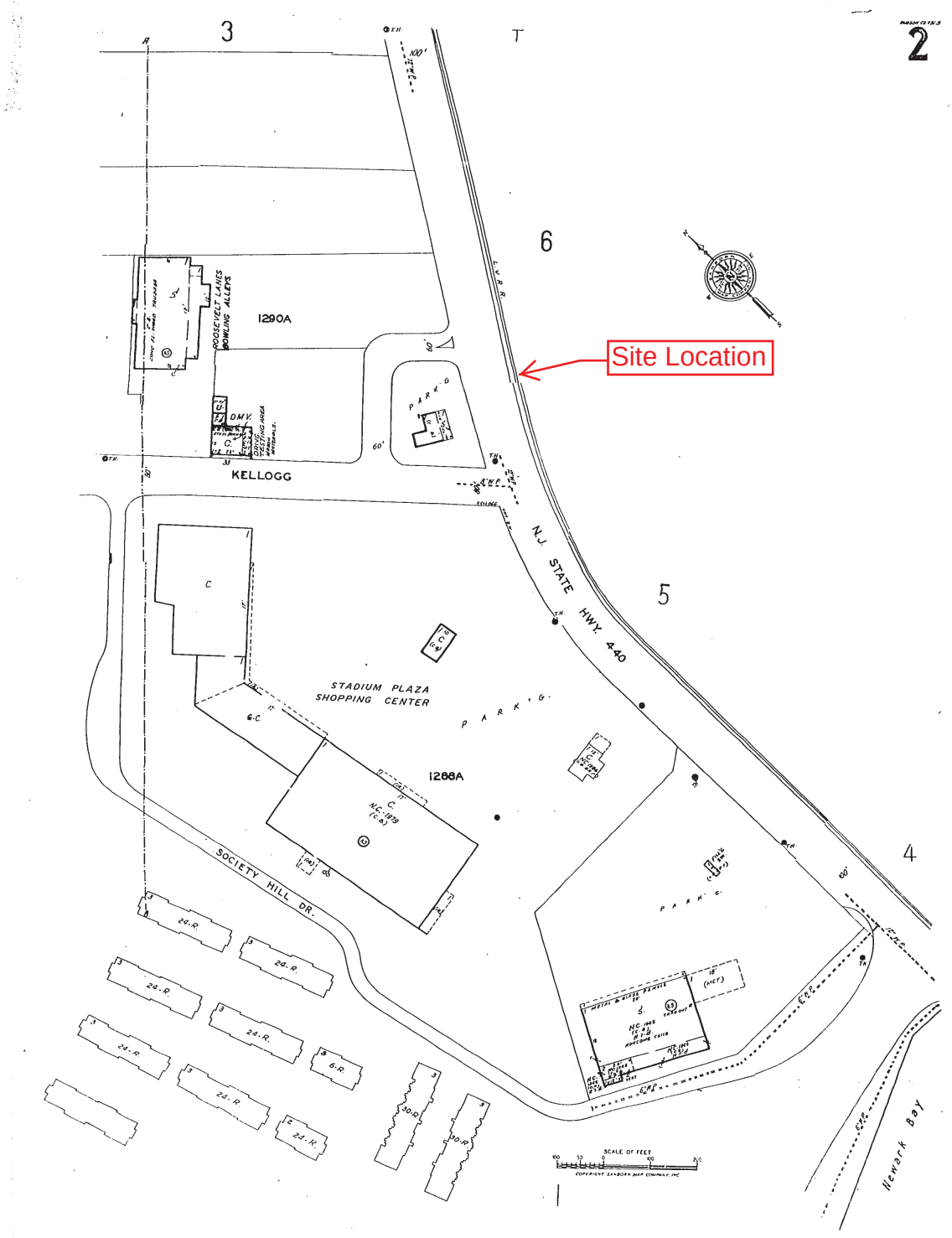

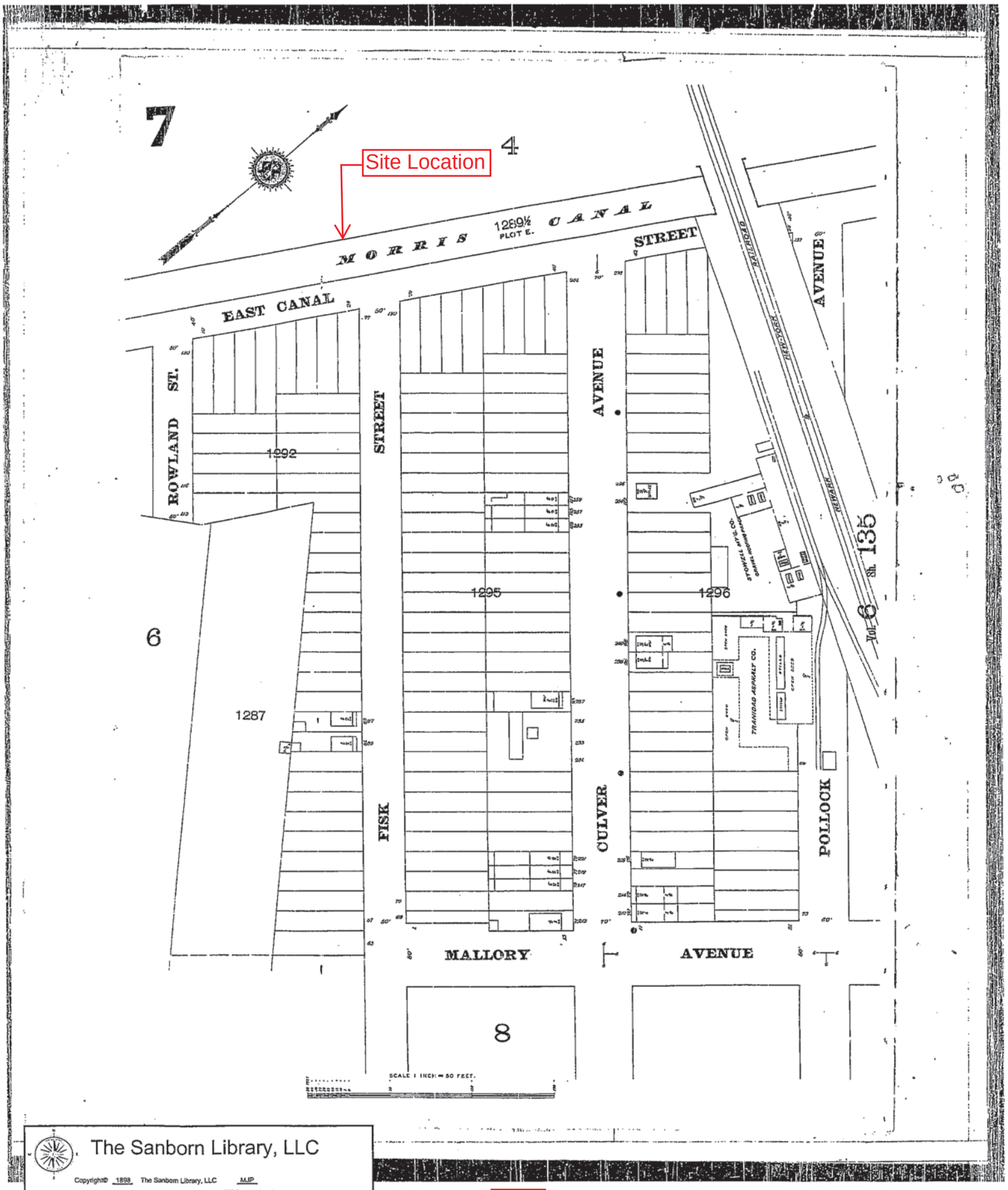

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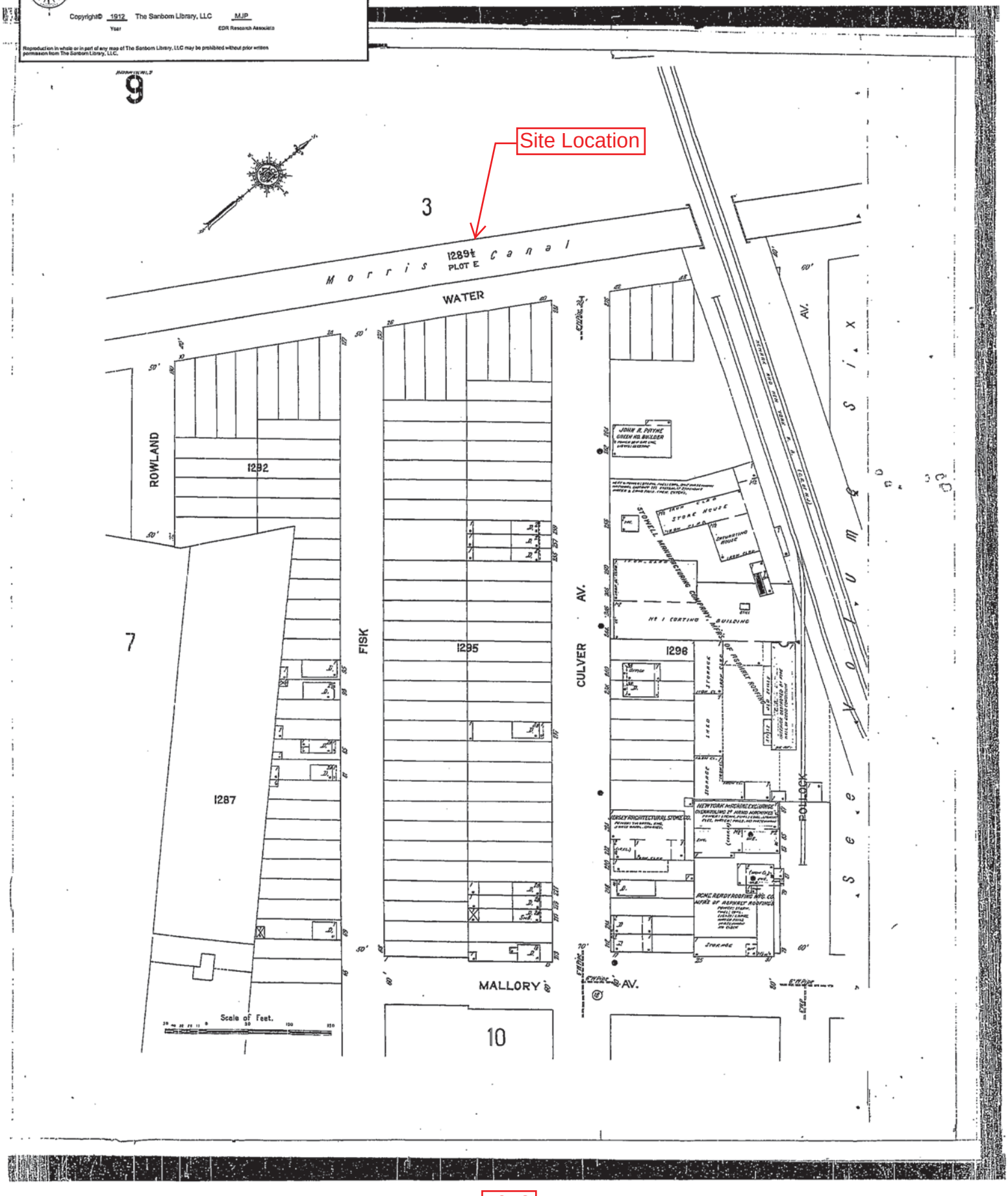
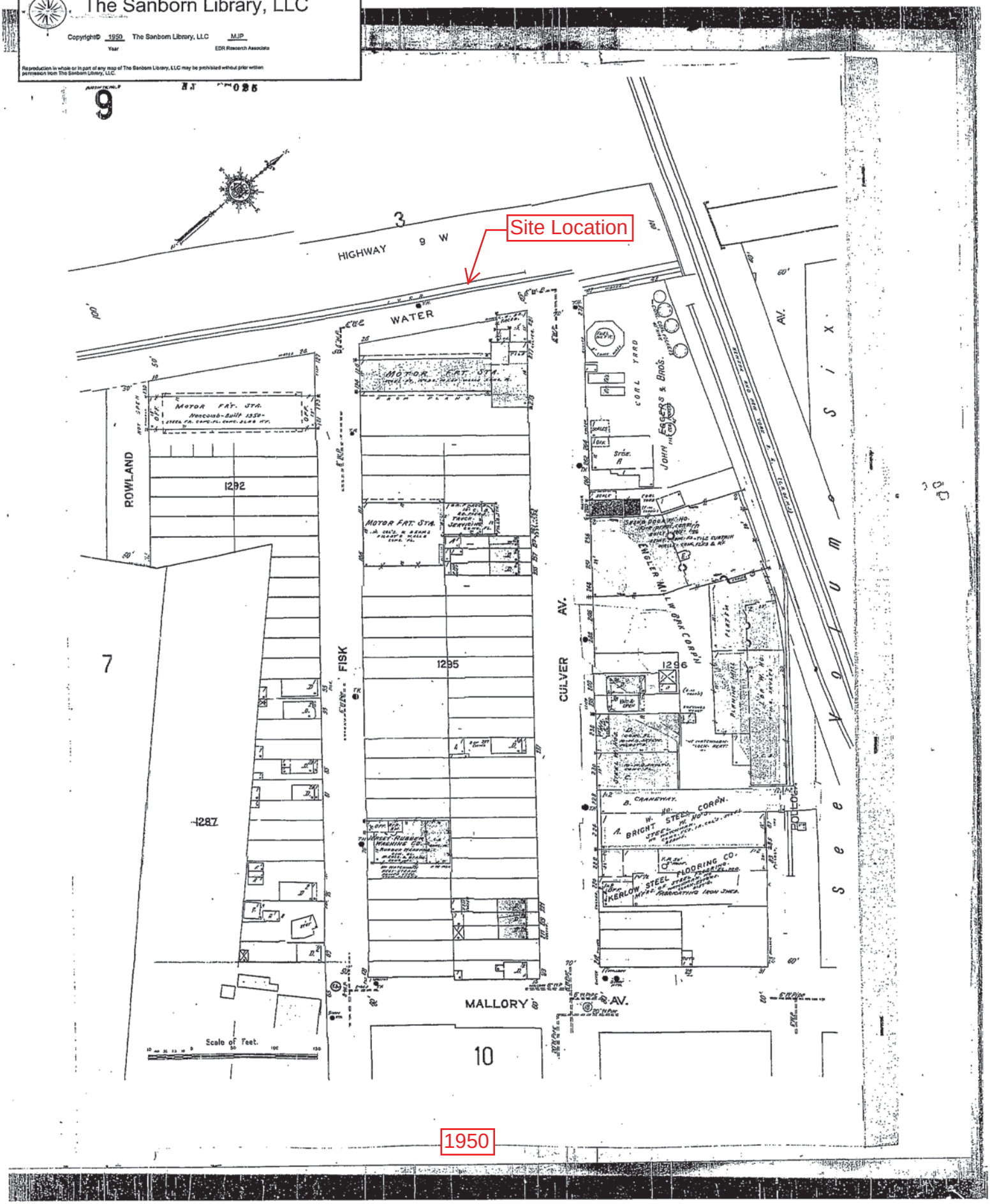


1912

9



1950

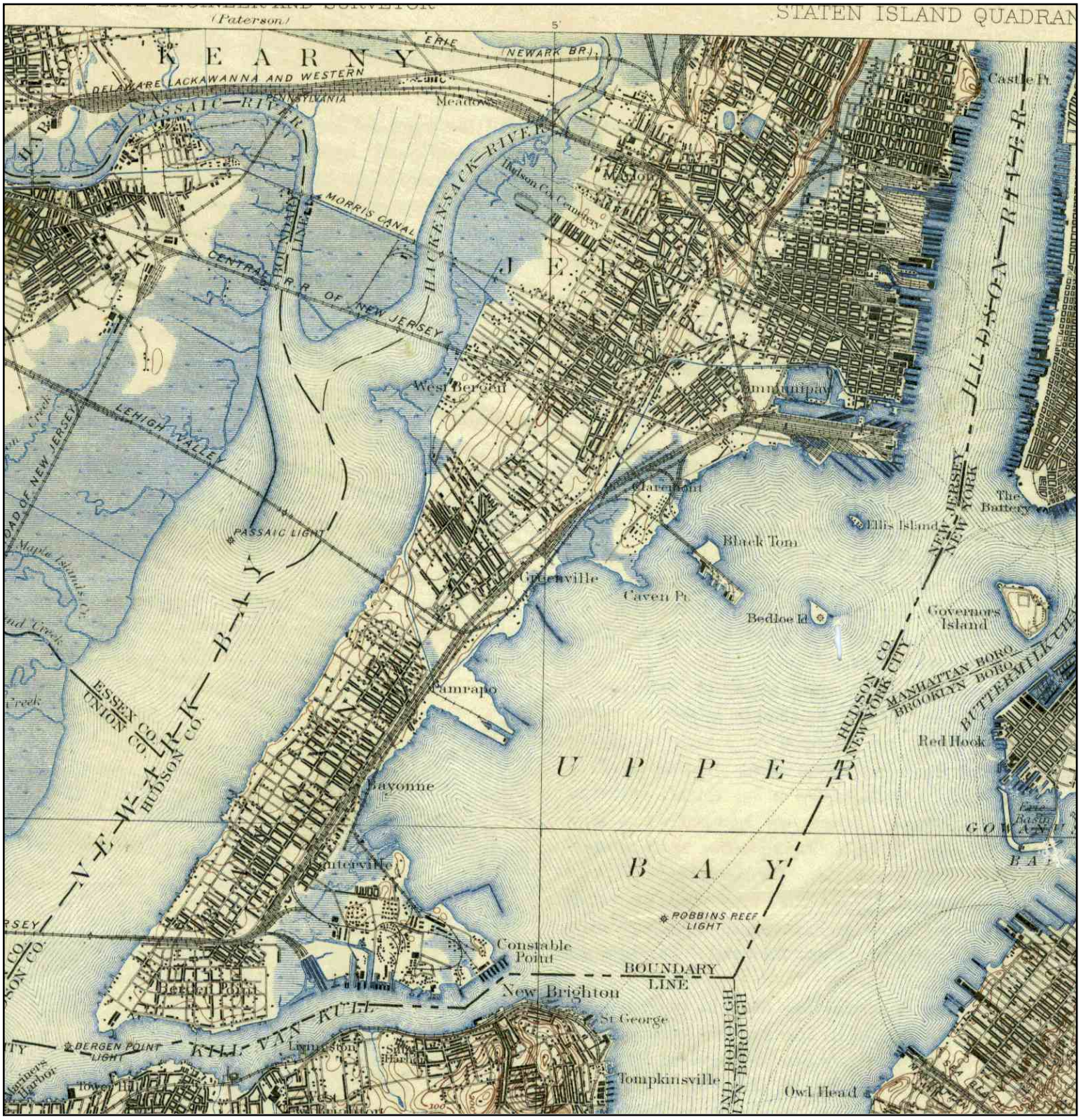
APPENDIX B-3

REGIONAL TOPOGRAPHIC MAPS

Historical Topographic Map

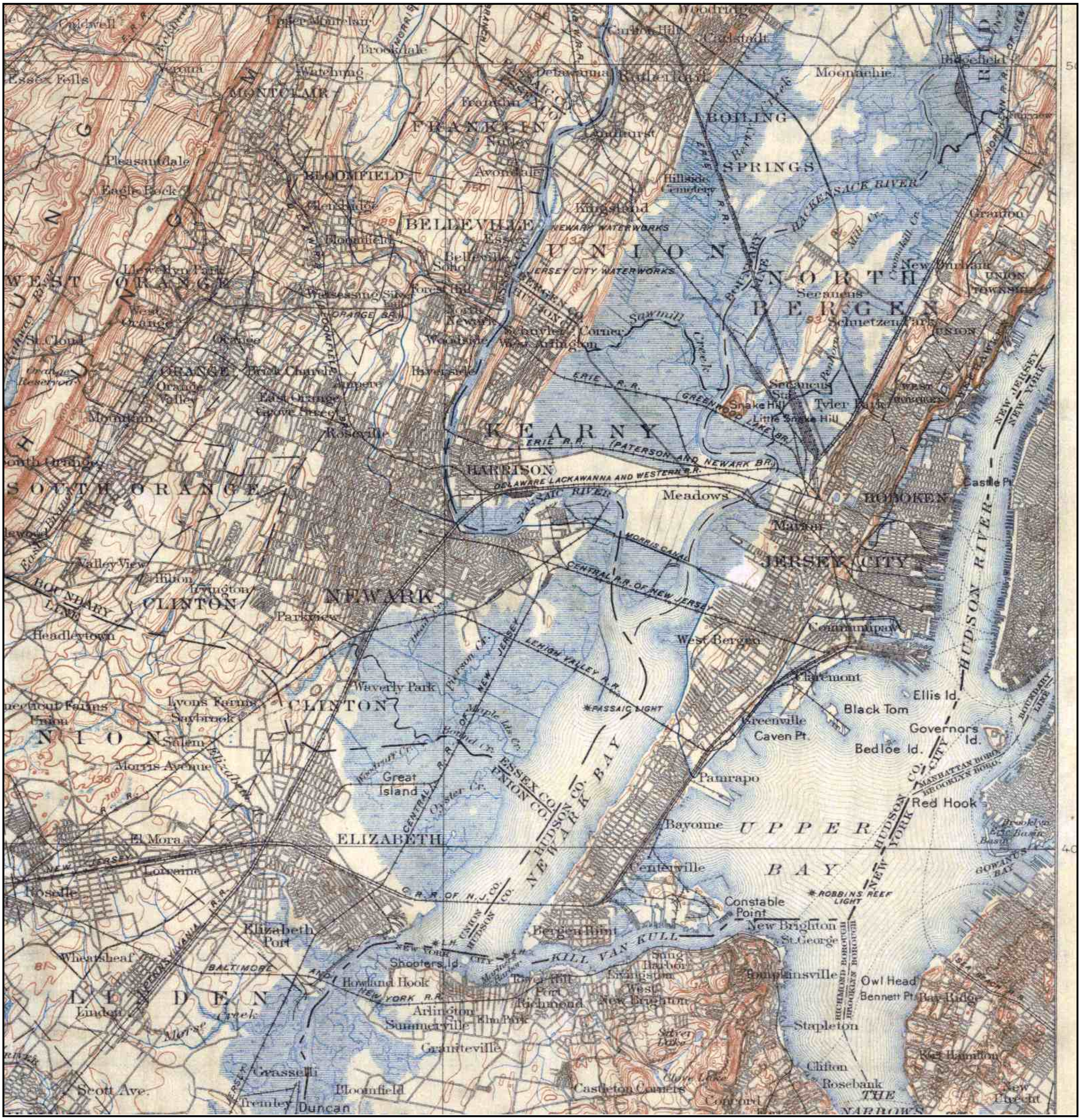
N	TARGET QUAD NAME: PASSAIC MAP YEAR: 1900 SERIES: 30 SCALE: 1:125000	SITE NAME: Old Dominion Site 134 ADDRESS: 100 Kellogg Street Jersey City, NJ 07305 LAT/LONG: 40.7119 / 74.1024	CLIENT: MACTEC, Inc. CONTACT: Andrew Shust INQUIRY#: 1870483.4 RESEARCH DATE: 03/06/2007

Historical Topographic Map



N	TARGET QUAD NAME: STATEN ISLAND MAP YEAR: 1900 SERIES: 15 SCALE: 1:62500	SITE NAME: Old Dominion Site 134 ADDRESS: 100 Kellogg Street Jersey City, NJ 07305 LAT/LONG: 40.7119 / 74.1024	CLIENT: MACTEC, Inc. CONTACT: Andrew Shust INQUIRY#: 1870483.4 RESEARCH DATE: 03/06/2007

Historical Topographic Map

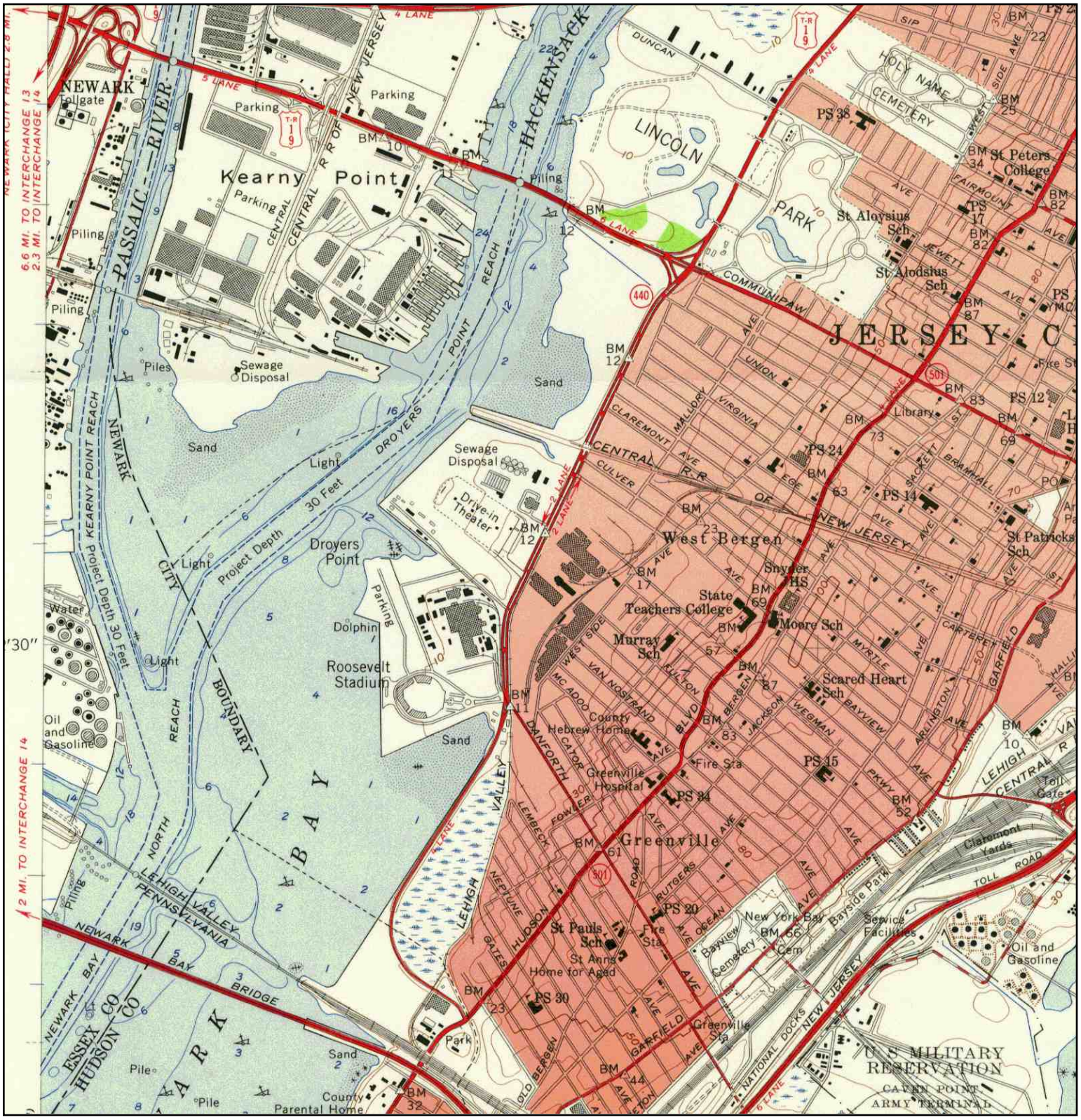


	TARGET QUAD		SITE NAME:	Old Dominion Site 134	CLIENT:	MACTEC, Inc.
N	NAME:	PASSAIC	ADDRESS:	100 Kellogg Street	CONTACT:	Andrew Shust
	MAP YEAR:	1905		Jersey City, NJ 07305	INQUIRY#:	1870483.4
			LAT/LONG:	40.7119 / 74.1024	RESEARCH DATE:	03/06/2007
	SERIES:	30				
	SCALE:	1:125000				

Historical Topographic Map

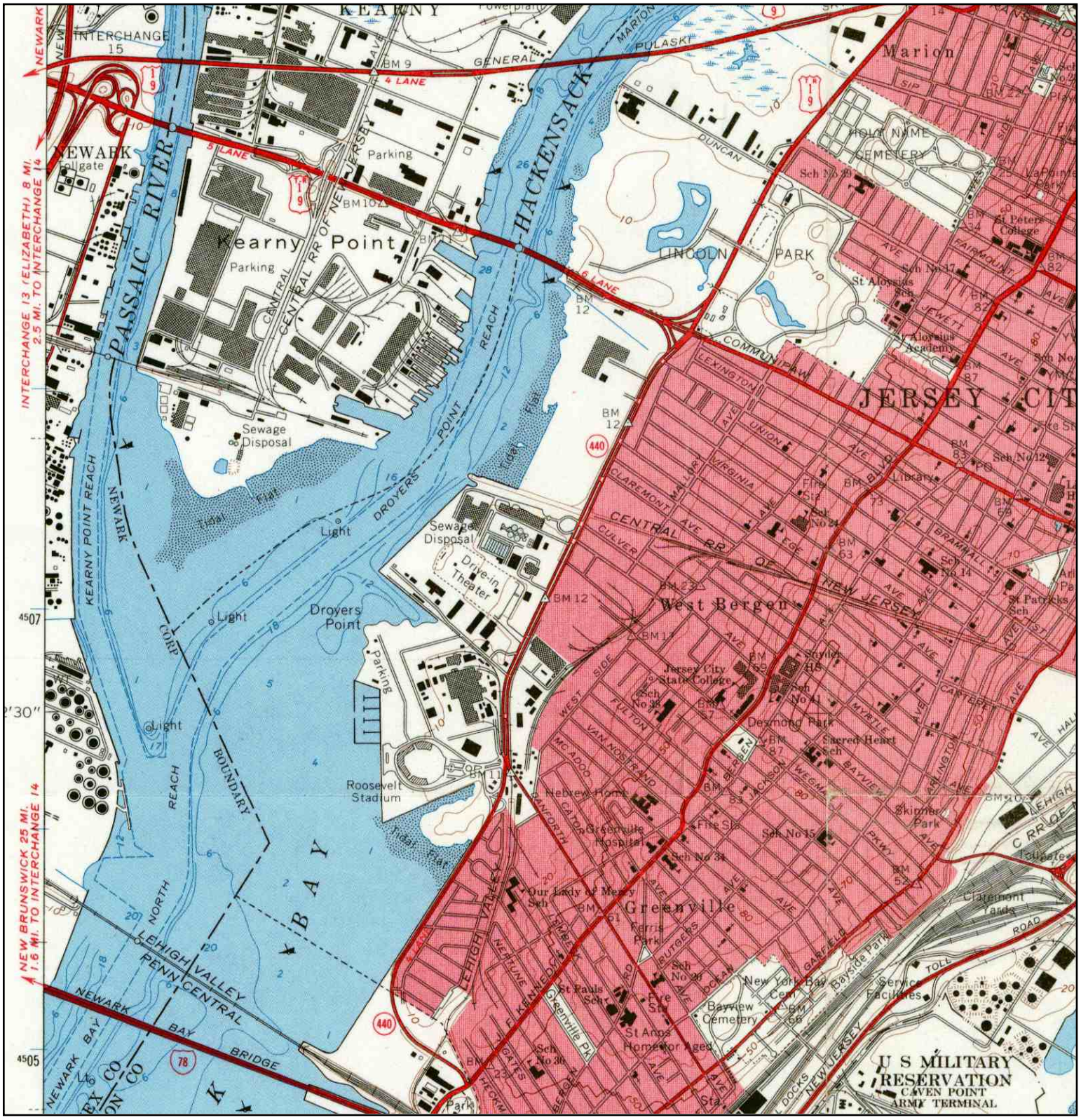
N	TARGET QUAD NAME: JERSEY CITY MAP YEAR: 1947 SERIES: 7.5 SCALE: 1:25000	SITE NAME: Old Dominion Site 134 ADDRESS: 100 Kellogg Street Jersey City, NJ 07305 LAT/LONG: 40.7119 / 74.1024	CLIENT: MACTEC, Inc. CONTACT: Andrew Shust INQUIRY#: 1870483.4 RESEARCH DATE: 03/06/2007

Historical Topographic Map



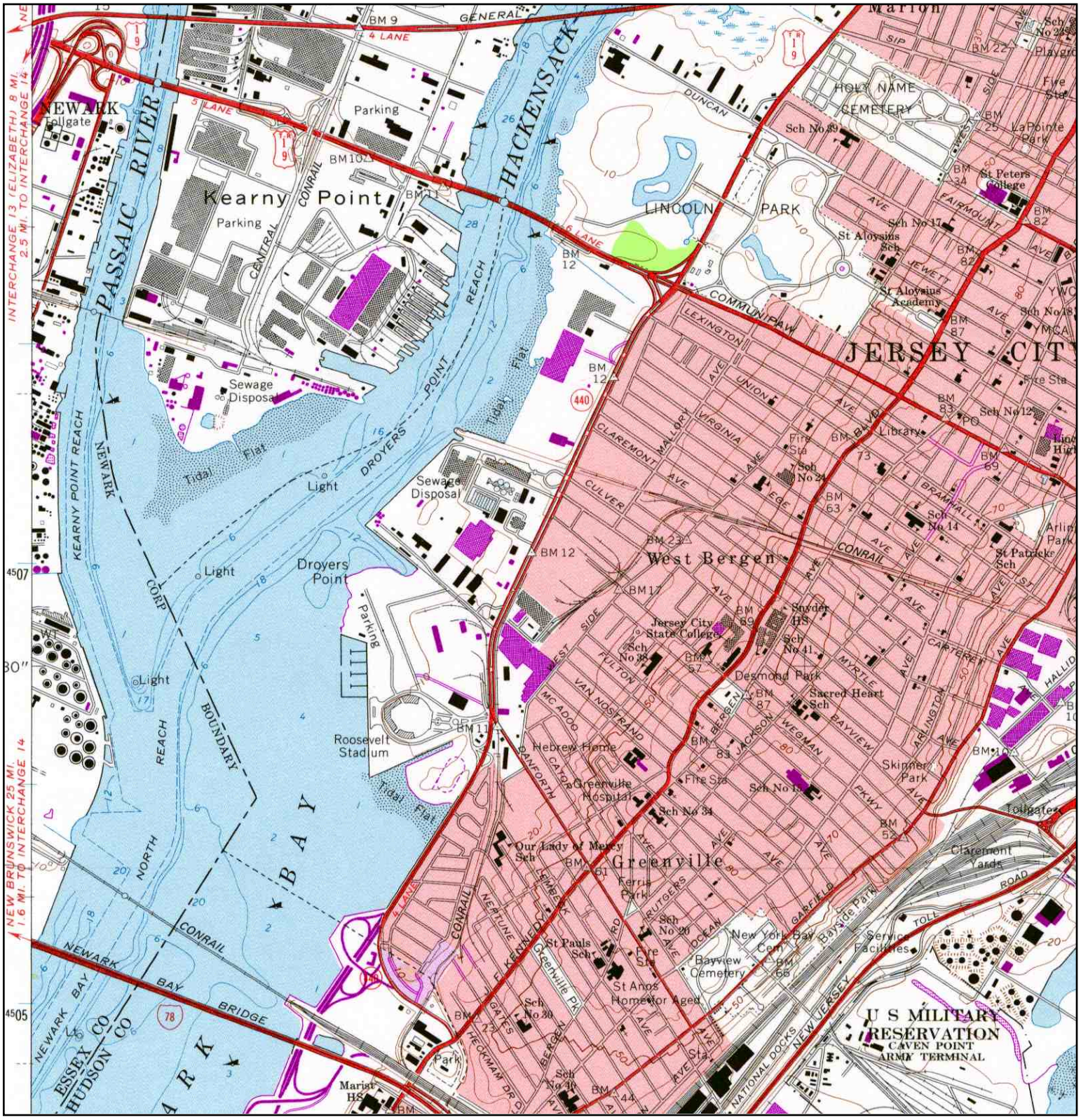
N	TARGET QUAD NAME: JERSEY CITY MAP YEAR: 1955 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Old Dominion Site 134 ADDRESS: 100 Kellogg Street Jersey City, NJ 07305 LAT/LONG: 40.7119 / 74.1024	CLIENT: MACTEC, Inc. CONTACT: Andrew Shust INQUIRY#: 1870483.4 RESEARCH DATE: 03/06/2007

Historical Topographic Map



N	TARGET QUAD NAME: JERSEY CITY MAP YEAR: 1967 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Old Dominion Site 134 ADDRESS: 100 Kellogg Street Jersey City, NJ 07305 LAT/LONG: 40.7119 / 74.1024	CLIENT: MACTEC, Inc. CONTACT: Andrew Shust INQUIRY#: 1870483.4 RESEARCH DATE: 03/06/2007

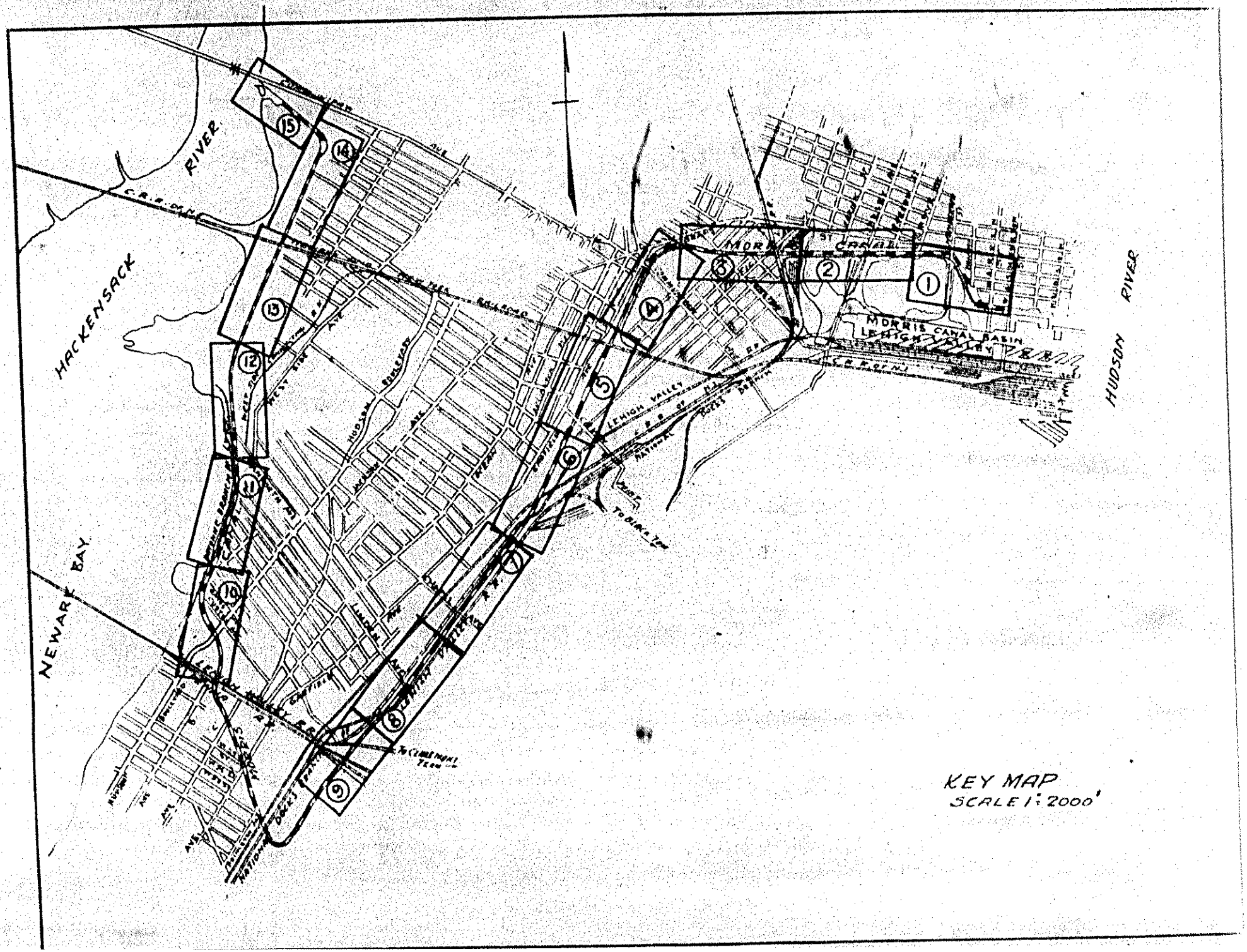
Historical Topographic Map



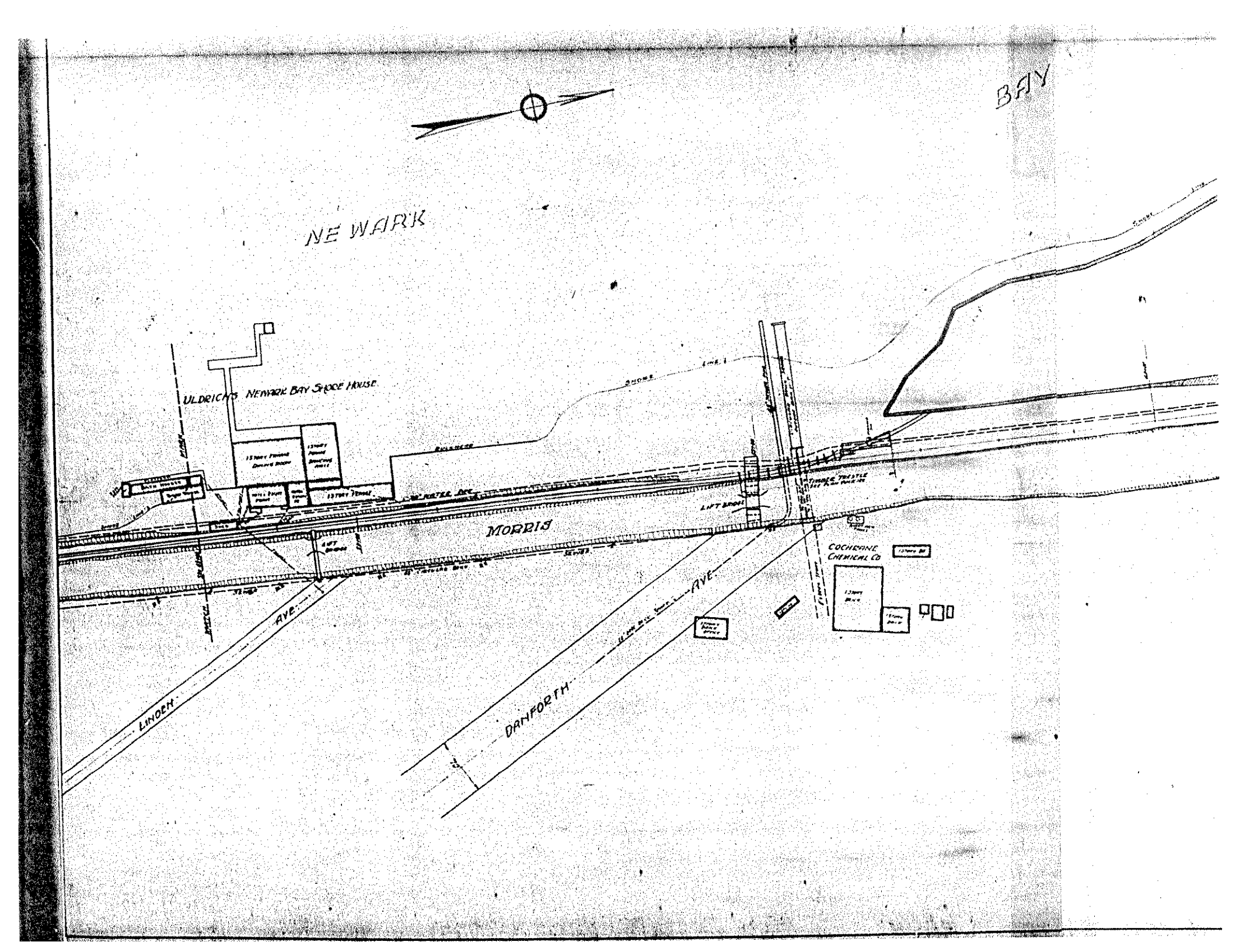
N	TARGET QUAD NAME: JERSEY CITY MAP YEAR: 1981 PHOTOREVISED FROM:1967 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Old Dominion Site 134 ADDRESS: 100 Kellogg Street Jersey City, NJ 07305 LAT/LONG: 40.7119 / 74.1024	CLIENT: MACTEC, Inc. CONTACT: Andrew Shust INQUIRY#: 1870483.4 RESEARCH DATE: 03/06/2007

APPENDIX B-4

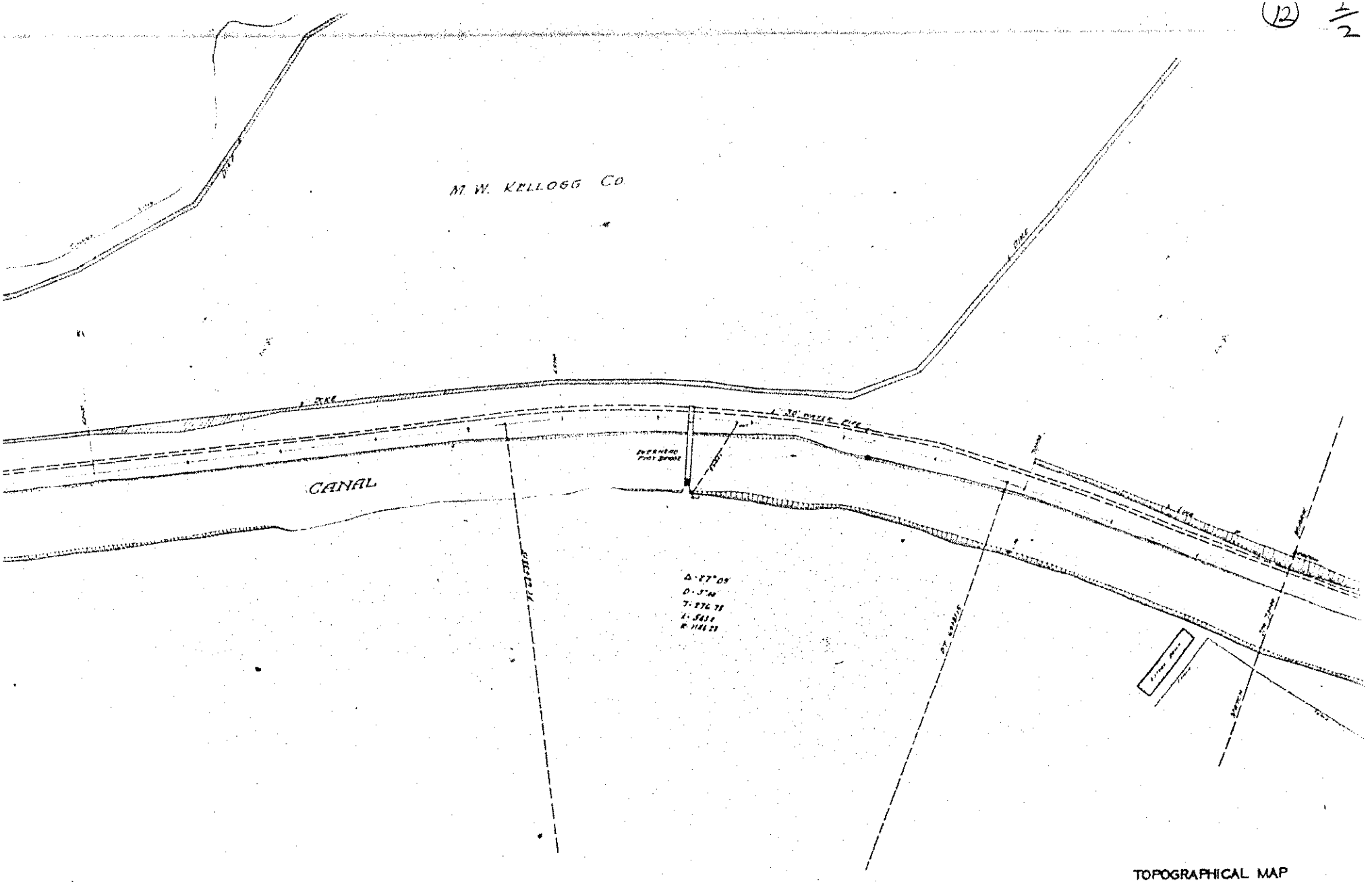
OTHER HISTORICAL MAPS



KEY MAP
SCALE 1:2000'

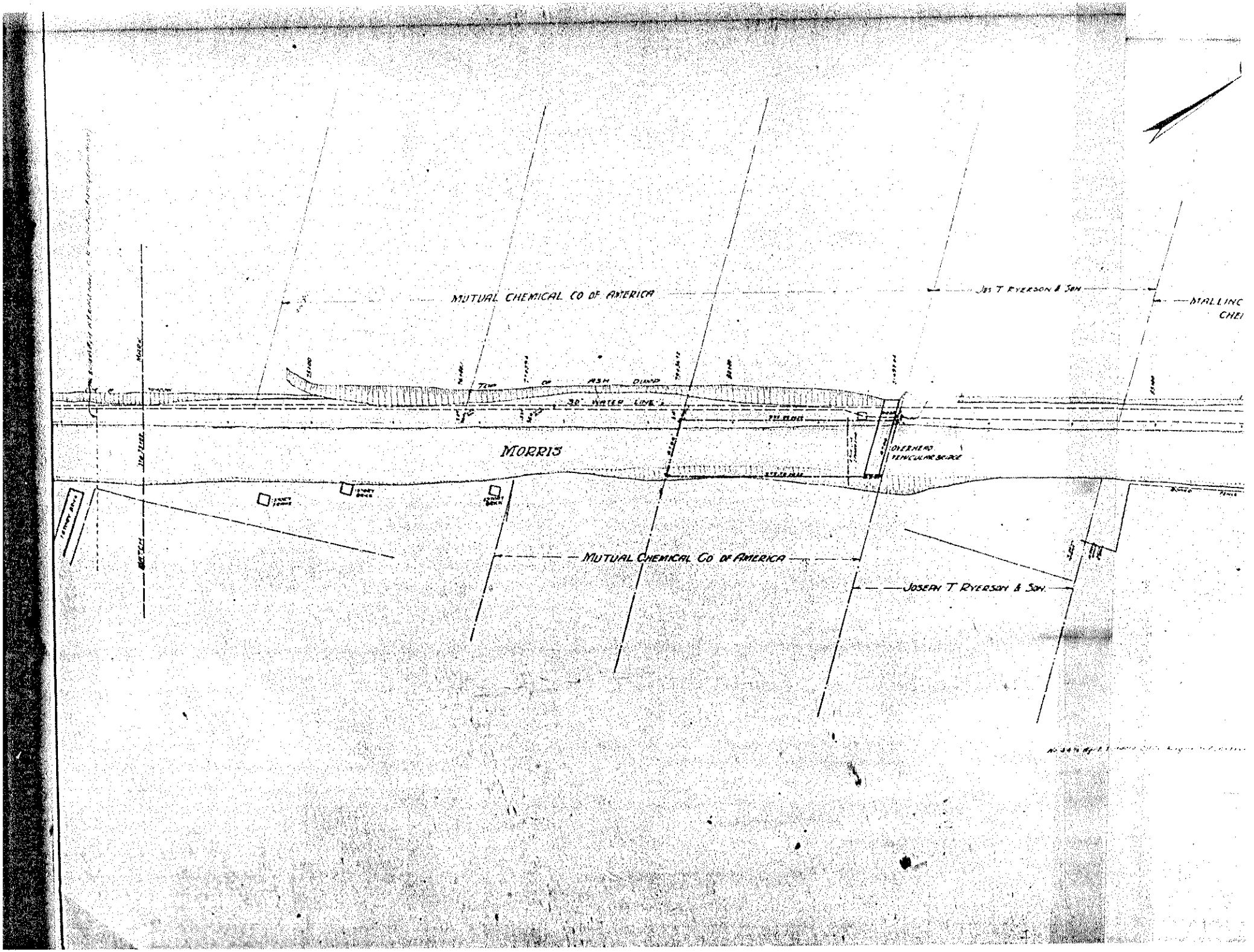

BAY
NEWARK
ULDRICKS NEWARK BAY SLUICE HOUSE
MORRIS
LINDEN
AVE.
DANFORTH
AVE.
COCHRANE CHEMICAL CO

(12) 1/2

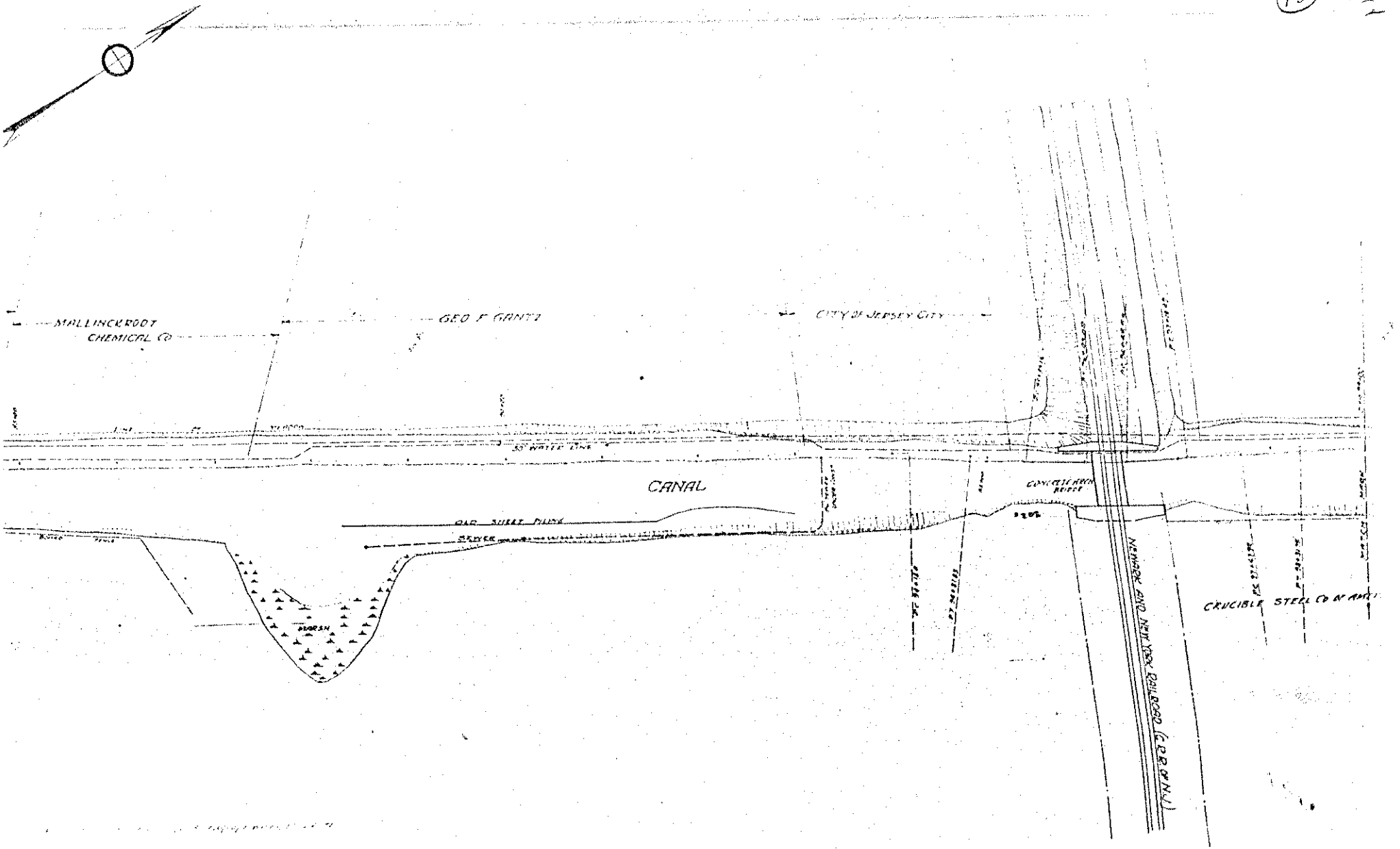


TOPOGRAPHICAL MAP
OF
MORRIS CANAL PROPERTY.
JERSEY CITY ~ HUDSON CO. N.J.
FROM ACTUAL SURVEY ~ JAN. 2 TO FEB. 28 1923.
OFFICE OF CHIEF ENGINEER ~ SCALE 1" = 50'
L.V.R.R. NEW YORK CITY.

V-M
12


MUTUAL CHEMICAL CO OF AMERICA
JOS T RYERSON & SON
MORRIS
OVERHEAD VEHICULAR BRIDGE
MUTUAL CHEMICAL CO OF AMERICA
JOSEPH T RYERSON & SON

(13)



TOPOGRAPHICAL MAP
OF
MORRIS CANAL PROPERTY
JERSEY CITY~ HUDSON CO. N.J.
FROM ACTUAL SURVEY~JAN 2 TO FEB. 28 192
OFFICE OF CHIEF ENGINEER~SCALE 1"=50'
L.V.R.R./ NEW YORK CITY.

V-1
13

HACKENSACK RIVER

NEWARK BAY

Plan B

Scale: 200 feet to 1 inch

See Plan B at lower left

Plan A

Scale: 100 feet to 1 inch

Droyers Point

Corporation of Jersey City

PLOT 6A

PLOT 1B

PROPOSED CITY BASIN

PIERHEAD & BULKHEAD LINE (MAY 19 1923)

OLD PIERHEAD LINE (MAY 1915)

OLD BULKHEAD LINE (MAY 1915)

DROYER ST.

M. W. KELLOGG COMPANY

M. W. Kellogg Company

Unexcelled Manufacturing Co.

Mutual Chemical Company of America

Michael Scathurchio

Joseph T. Ryerson & Son Inc.

Hugo Bermal Slaw

Harold D

Corporation of Jersey City

Jersey City

NEWARK & NEW YORK R.R. (Section R.R. of New Jersey)

JERSEY CITY BRANCH NET

LEHIGH VALLEY R.R.

OLD MORRIS CANAL

Central R.R. of New Jersey

Central R.R. of N.J.

Clark Thread Company

(VACANT)

RESERVOIR

NEWARK BAY STEAMBOAT CO. NEWARK BAY SHORE HOUSE

COLUMBIA REFINING CO.

Contran Chemical Co

M W Kellogg Co

WEST SIDE AVE.

EXTENSION OF COMFORT AVE.

CONNECT

1288A 513

1285 518

1286

1290A 513

1257½ 488

1258 487

1260 488

1262 490

1263 491

1264½ 497

1269 496

1270 497

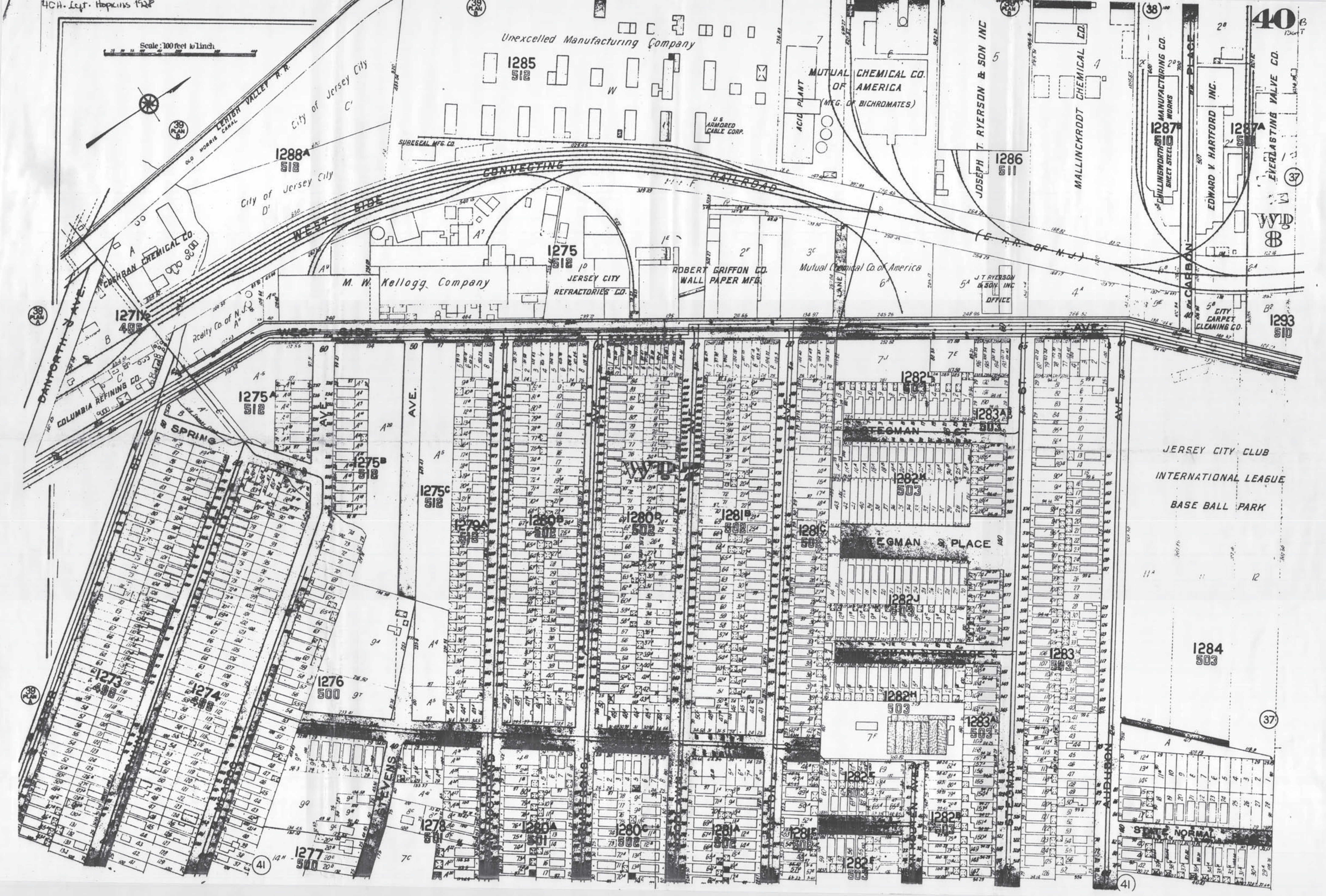
1271 495

1271½ 495

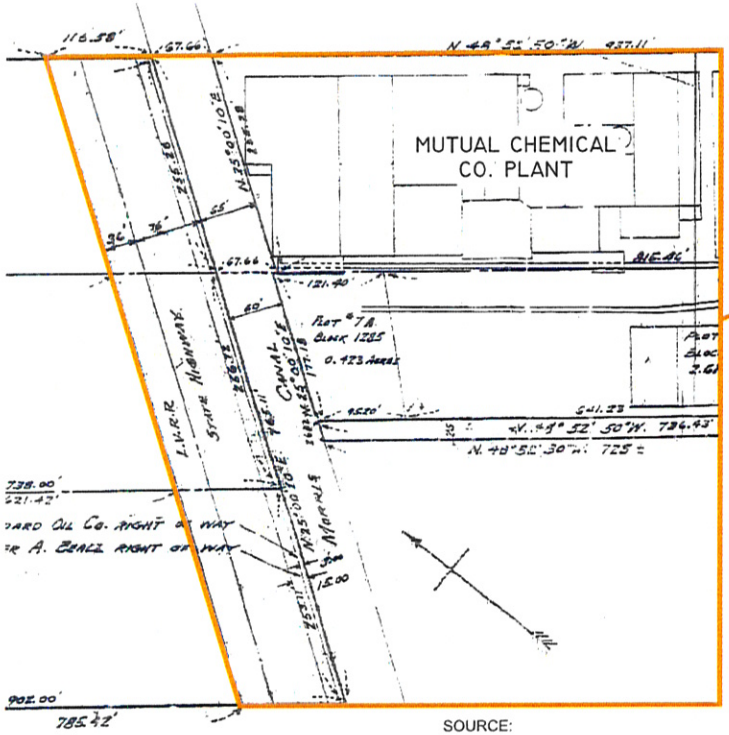
WD 7

See Plan A at upper right

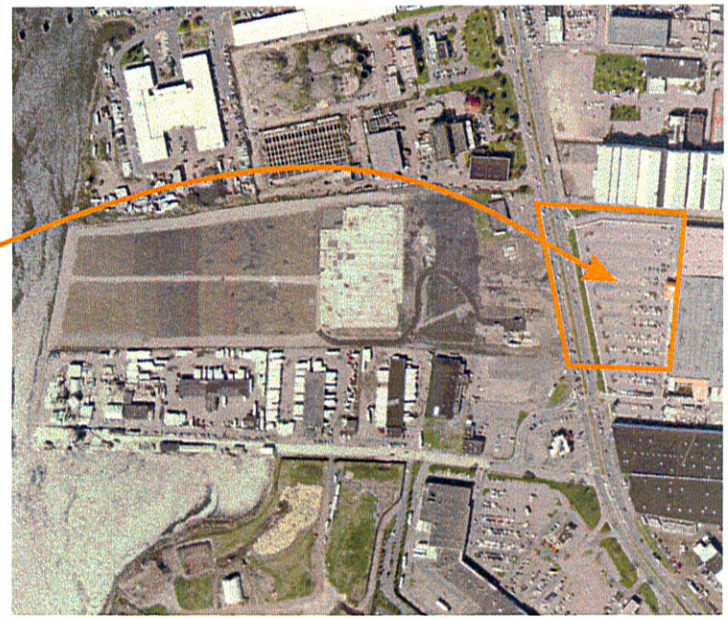
Straight line by J.M. Hopkins & Bro. C.E.



40
Scale: 100 feet to 1 inch.
4CH. Lgt. Hopkins 1928
Unexcelled Manufacturing Company
1285 512
U.S. ARMORED CABLE CORP.
SUREGEAL MFG. CO.
ACID PLANT
MUTUAL CHEMICAL CO. OF AMERICA (MFG. OF BICHROMATES)
JOSEPH T. RYERSON & SON INC
1286 511
MALLINCKRODT CHEMICAL CO.
CHILLINGWORTH MANUFACTURING CO. SHEET STEEL WORKS
1287B 510
EDWARD V HARTFORD INC.
1287A 510
EVERLASTING VALVE CO.
CARBON PLACE
LEHIGH VALLEY R.R.
OLD MORRIS CANAL
City of Jersey City
1288A 512
CONNECTING RAILROAD
WEST SIDE
C. R.R. OF N.J.
COCHRAN CHEMICAL CO.
M. W. Kellogg Company
1275 512
JERSEY CITY REFRACTORIES CO.
ROBERT GRIFFON CO. WALL PAPER MFG.
Mutual Chemical Co. of America
LANE
J.T. RYERSON & SON INC OFFICE
CITY CARPET CLEANING CO.
1293 510
DANFORTH AVE.
1271½ 495
Realty Co. of N.J.
COLUMBIA REFINING CO.
WEST SIDE AVE.
1275A 512
SPRING
1275B 512
1275C 512
1279A 512
1280B 502
1280D 502
1281B 502
1281C 502
1282L 503
1283A 503
STEGMAN CT.
1282K 503
STEGMAN PLACE
1282J 503
1282H 503
1283 503
1283A 503
JERSEY CITY CLUB
INTERNATIONAL LEAGUE
BASE BALL PARK
1284 503
1273 498
1274 498
1276 500
STEVENS
1277 500
1278 501
1280A 501
1280C 502
1281A 502
1281E 502
1282E 503
1282F 503
1282G 503
VAN HORN AVE.
STEGMAN ST.
AUDUBON AVE.
STATE NORMAL
37
38
39
41



SOURCE:
MUTUAL CHEMICAL CO. OF AMERICA
PROPERTY PLAN, REVISED 1934.



SCALE: 1" = 900'

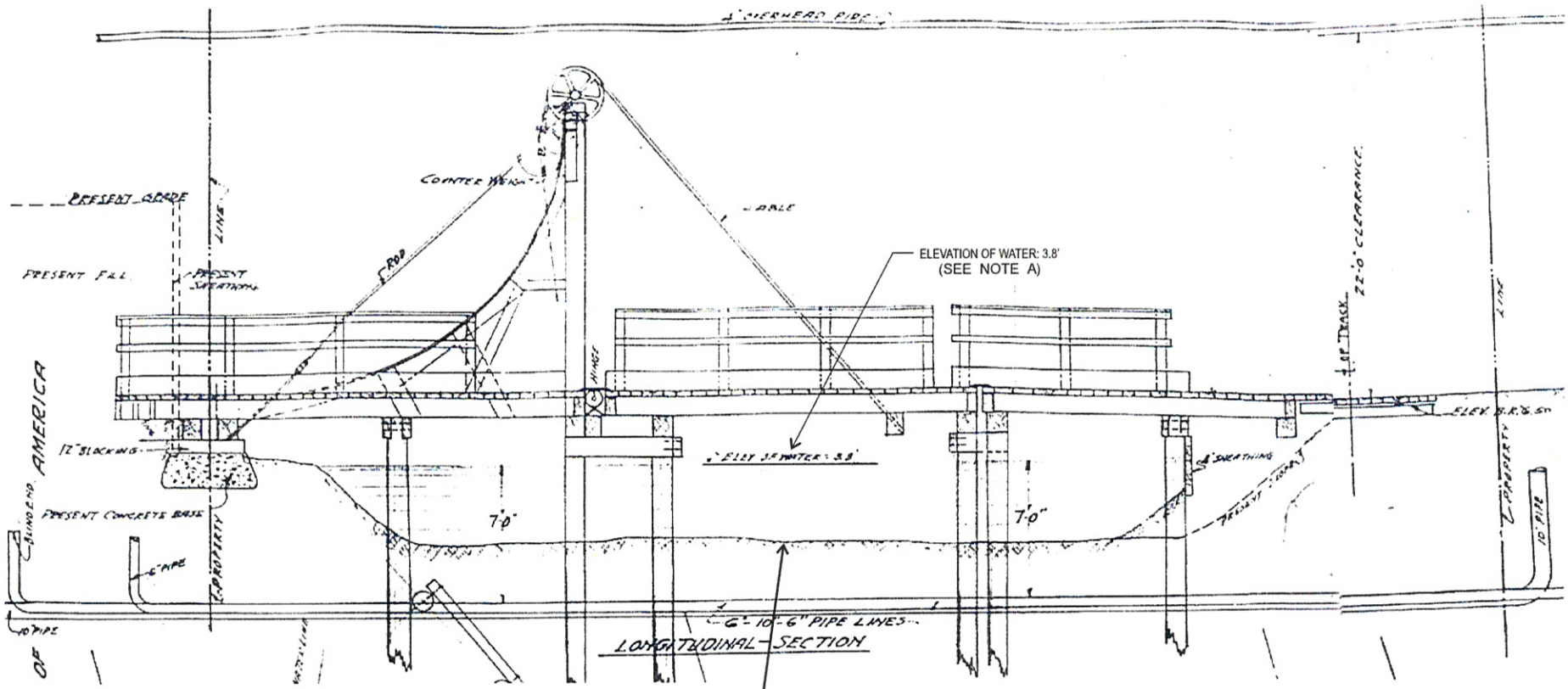
HydroQual

HYDROQUAL, INC.
1200 MACARTHUR BOULEVARD
MAHWAH, NEW JERSEY 07430
(201) 529-5151 F: 529-5728

FIGURE 3.4-2

LOCATION OF MORRIS CANAL
NEAR SA-7

HONEYWELL STUDY AREA 7
JERSEY CITY, NJ



NOTE A:

ELEVATION OF WATER	=	3.8' MSL
SCALED DEPTH OF WATER	=	- 4.0'
CALCULATED ELEVATION OF CANAL BOTTOM	=	- 0.20' MSL

SCALE: AS SHOWN

HydroQual

HYDROQUAL, INC.
1200 MACARTHUR BOULEVARD
MAHWAH, NEW JERSEY 07430
(201) 529-5151 F: 529-5728

FIGURE 3.4-3

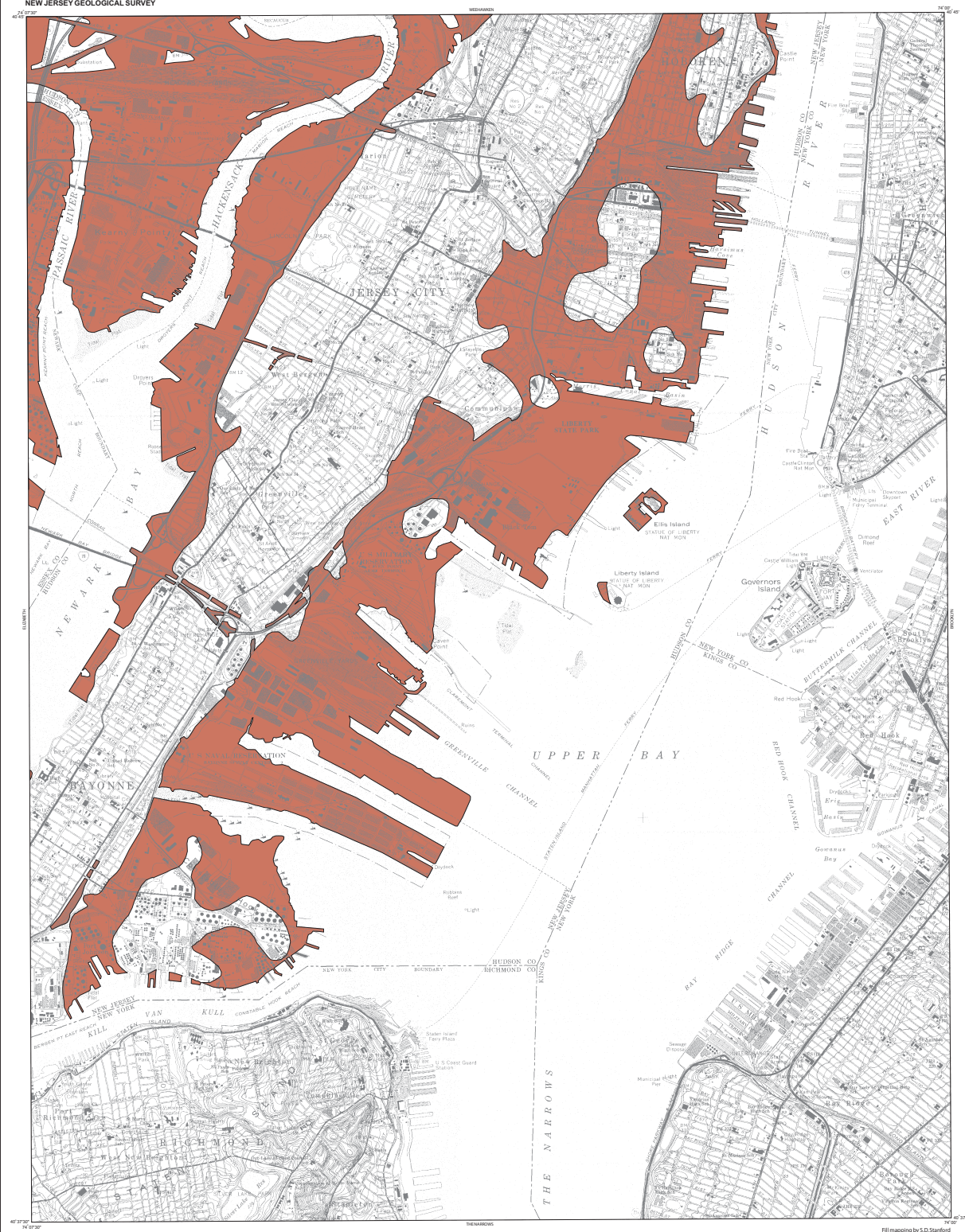
REPRINT OF
1920 LONGITUDINAL SECTION
PROPOSED MORRIS CANAL BRIDGE

HONEYWELL STUDY AREA 7
JERSEY CITY, NJ

APPENDIX B-5

HISTORIC FILL MAP
FOR JERSEY CITY QUADRANGLE

DEPARTMENT OF ENVIRONMENTAL PROTECTION
LAND USE MANAGEMENT
NEW JERSEY GEOLOGICAL SURVEY



EXPLANATION

The "Brownfield and Contaminated Site Remediation Act" (N.J.S.A. 58:10B-1 et seq.) requires the Department of Environmental Protection to map regions of the state where large areas of historic fill exist and make this information available to the public. This map shows areas of historic fill covering more than approximately 5 acres. For the purposes of this map, historic fill is non-indigenous material placed on a site in order to raise the topographic elevation of the site. No representation is made as to the composition of the fill or presence of contamination in the fill. Some areas mapped as fill may contain chemical-production waste or ore-processing waste that exclude them from the legislative definition of historic fill.

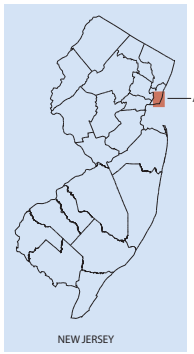
Fill was mapped from stereo aerial photography taken in March 1979, supplemented in places by planimetric aerial photography taken in the spring of 1991 and 1992. Additional areas of fill were mapped by comparing areas of swamp, marsh, and floodplain shown on archival topographic and geologic maps on file at the N. J. Geological Survey, dated between 1840 and 1910, to their modern extent. In a few places, fill was mapped from field observations and from drillers' logs of wells and borings.

Most urban and suburban areas are underlain by a discontinuous layer of excavated indigenous soil mixed with varying amounts of non-indigenous material. This material generally does not meet the definition of historic fill and is not depicted on this map. Also, there may be historic fills that are not detectable on aerial photography or by archival map interpretation and so are not shown on this map, particularly along streams in urban and suburban areas.

Use of the maps related to the Technical Rules, N.J.A.C. 7:26E

This map is provided for informational purposes only. The use of this map as the only source of information regarding the presence of historic fill at a site does not fulfill the diligent inquiry requirements of the Preliminary Assessment set forth at, N.J.A.C. 7:26E-3.1(c). This map may be used as one source of information to fulfill the requirements of the Site Investigation at, N.J.A.C. 7:26E-3.12. **This map is not intended to fulfill the Remedial Investigation requirements associated with historic fill at, N.J.A.C. 7:26E-4.6(b).**

Historic Fill
Non-Fill Area



APPROXIMATE MEAN DECLINATION, 1998

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

The information shown here is subject to periodic update and revision. Base map from U.S. Geological Survey, 1967. Photorevised 1981. Digital data is available upon request from the New Jersey Geological Survey.

Fill mapping by S.D.Stanford
GIS cartography by M.Girard

HISTORIC FILL OF THE JERSEY CITY QUADRANGLE

2004

APPENDIX C

PREVIOUS RI REFERENCE INFORMATION

APPENDIX C-1

INITIAL RI BORING LOGS/DATA
(TetraTech NUS, 1999)

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT & E ENVIRONMENTAL
DRILLING RIG: GEOPROBE
BORING NUMBER: 153 SB A1
DATE: 5-21-97
GEOLOGIST: HALE SIMPSON
DRILLER: FALUCCA

Sample No. and Type or RQD	Depth (Ft) or Run No	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks (153 SB ( ))	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
					black/dark	6" asphalt over sandy	ML		0			
				A	brown	silt over silty sand,	SM	M (0002)	0			
						both with white ash/		W	—			
	4		2.4/4			cinders mixed in		— (0204)	—			
					brown/grey/green	silty fine sand over silty sand w/yellow grns	SP/SP	W	0			
				A	Yellowish	clayey silt/silty	CL/ML	W (0406)	0			
				A	green	clay	CL/ML	W	0			
	9		3/4	E	black	slag pebbles, sand, silt	SW	W (0608)	—			
				N	gray	clayey silt		M	0			
				A	tan	fine sand, uniform	SP	M-W (0810)	0			
					↓	↓	↓	W	—			
	12		2/4					W — (1012)	—			
				13	↓	↓	↓	W	0			
				A	red	very fine ↓	SP	W (1214)	0			
				A	↓	↓	SP	W	0			
	16		3/4	16'				(1416)	—			
				BOTM								
								( )				
								( )				
								( )				
								( )				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 2" I.D. MACROCORE SAMPLER B: 1230 E: 1258

Drilling Area Background (ppm): ___

Converted to Well: Yes ___ No ✓ Well I.D. #: ___

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT & E ENVIRONMENTAL
DRILLING RIG: GEOPROBE
BORING NUMBER: 153 SB A2
DATE: 5-21-97
GEOLOGIST: HALE SIMPSON
DRILLER: FALUCCA

Sample No. and Type or RQD	Depth (Ft) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks (153 SB ( ))	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
				•	brown/black	6" ASPHALT. OVER	SM		0			
				A ▽	↓	silty sand w/cinders	SM	M (0002)	0			
				• A	green-gray	silty sand, some	SM	W	0			
	4		3/4			yellow grains		(0204)	—			
				•	tan/brown/	silty sand w/trace		W	0			
				A	red	fine gravel/cinders, yellow		(0406)	0			
						grains throughout			—			
	9		2/4					— (0608)	—			
				• E 9	black	clay, medium plasticity	CL	W	0			
				N	grey/black	clayey silt, rootlets	ML	W (0810)	0			
				A	tan	2": fine sand @ base	SP		—			
	12		2.5/4					— (1012)	—			
						fine to medium sand	SW	W	0			
				13.5	↓							
					red	very fine sand uniform	SP	W (1214)	0			
									—			
	16		2.5/4	16?				— (1416)	—			
				BOTM								
								( )				
								( )				
								( )				
								( )				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 2" I.D. MACROCORE SAMPLER B: 1305 E: 1330

Drilling Area Background (ppm): ___

Converted to Well: Yes ___ No ✓ Well I.D. #: ___

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT & E ENVIRONMENTAL
DRILLING RIG: GEOPROBE
BORING NUMBER: 153 SB A3
DATE: 5-21-97
GEOLOGIST: HALE SIMPSON
DRILLER: FALUCCA

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks (153 SB ( ))	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
					black	6" asphalt over silty	SM	D	0			
				A		sand w/cinders	SM	M (0002)	0			
				A	↓	up to 2"	SM	M	0			
	4		3/4	▽				(0204)	—			
						mostly cinders (½")	GM	W-S	0			
				A		with silt/sand	GM	W-S (0406)	0			
				A	↓	↓	GM	W-S	0			
	9		3/4			white mold on some	GM	(0608)	—			
						slug, looks like ice	GM	S	0			
				A	↓	↓		S (0810)	0			
									—			
	12		2/4	12 N	F?			— (1012)	—			
					black	loose clay fluff	CL	S	0			
					brown grades	fine uniform sand	SP	W-S (1214)	0			
				A 14.5	to red		SP	S	—			
	16		2.5/4	16' BOTM	↓			— (1416)	—			
								( )				
								( )				
								( )				
								( )				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): ___

Remarks: 2" I.D. MACROCORE SAMPLER B: 1335 E: 1400

Converted to Well: Yes ___ No ✓ Well I.D. #: ___

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT & E ENVIRONMENTAL
DRILLING RIG: GEOPROBE
BORING NUMBER: 153 SB A4
DATE: 5-21-97
GEOLOGIST: HALE SIMPSON
DRILLER: FALUCCA

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks (153 SB ( ))	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
				0	black	silty sand w/ cinders,	SM	M	0			
				A ▽	↓	brick, etc	SM	M (0002)	0			
								W	—			
	4		2/4					W (0204)	—			
				0	black to	a 6" clayey silt		W	0			
				A	grey	layer @ 5'		W (0406)	0			
				0	↓			W	0			
	8		4/4	A				W (0608)	0			
				0		predominantly	GM	W	0			
				A		½" cinders	GM	W (0810)	0			
				0		w/ice" coating	GM	W	0			
	12		4/4	A F 12	black	clay size fluff	GM CL	W (1012)	0			
				0 N	tan	fine → medium sand	SP	W	0			
				A 14	↓	↓	SP	W (1214)	0			
					red				—			
	16		2/4	16'				(1416)	—			
				BOTM								
								( )				
								( )				
								( )				
								( )				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): ___

Remarks: 2" I.D. MACROCORE SAMPLER B: 1410 E: 1440

Converted to Well: Yes ___ No ✓ Well I.D. #: ___

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT & E ENVIRONMENTAL
DRILLING RIG: GEOPROBE
BORING NUMBER: 153 SB A5
DATE: 5-21-97
GEOLOGIST: HALE SIMPSON
DRILLER: FALUCCA

Sample No. and Type or RQD	Depth (Ft.) or Run No	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
						6" ASPHALT		153 SB ( )				
					black –	mostly cinders/slag	SW	M	0			
				A	brown	w/ sand / silt	SW	M (0002)	0			
					↓		SW	M	0			
	4		4/4	A ▽	yellow / orange	silty sand, some slag	SM	M (0204)	0			
					yellowish			W	0			
				A	green			W (0406)	0			
								W	0			
	9		4/4	A				W (0608)	0			
						interbedded slag (GM)	SM/SM	W	0			
				A		and sandy silt	GM/SM	W (0810)	0			
									—			
	12		2/4	F	12			— (1012)	—			
				N	grey	clayey silt	ML	M	0			
					black	clay, medium plastic	CL	M-W (1214)	0			
				A 15	↓		CL	M-W	0			
PS	16		4/4	A 16' BOTM	brown	well graded sand, fine to medium coarse	SW	M (1416)	0			
								( )				
								( )				
								( )				
								( )				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 2" I.D. MACROCORE SAMPLER B: 1450 E: 1520
east+ (dpl)

Drilling Area Background (ppm): ___

Converted to Well: Yes ___ No ✓ Well I.D. #: ___

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT & E ENVIRONMENTAL
DRILLING RIG: GEOPROBE
BORING NUMBER: 153 SB A6
DATE: 5-22-97
GEOLOGIST: HALE SIMPSON
DRILLER: FALUCCA

Sample No and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
						6" ASPHALT		153 SB A6( )				
				•	black w/	silty sand w/ slag	SM		0			
				A	some	up to 1', orange	SM	M (0002)	1			
					orange	sand @ base	SP	M	0			
	4		2.5/4			sm/slag again	SM	— (0204)	—			
				• ▽			SM	M	0			
				A	green-grey	silty sand, trace	SM	W (0406)	0			
				•								
				A		rk / slag fragments	SM	W	0			
	8		3/4					W (0608)	—			
				•				W	0			
				A				W (0810)	0			
				•	black							
						silty sand / rock frags	SM	W	0			
	12		4/4	A E	12	(1" rock)	GM	W (1012)	0			
				• N ?	grey-green	clayey silt (graphite)	ML	M	0			
				A ?	black	soft clay	CL	M-W (1214)	0			
				F	15		CL	M-W	0			
PS	16		4/4	• N	tan-brown	fine uniform sand, roots	SP	W (1416)	0			
				A								
				•	17	pH = 10	SP		0			
				A	red w/	very fine sand, laminated	SP	(1618)	0			
				•	black	@ angle 10°	SP		0			
PS	20		4/4	A	strands		SP	(1820)	0			
				•					0			
								(2022)	0			
				A								
				•		no black			0			
PS	24		4/4	M 24'				(2224)	0			
				BOTM								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 2" I.D. MACROCORE SAMPLER B: 0745 E: 0940

Drilling Area Background (ppm): ___

Converted to Well: Yes ___ No ✓ Well I.D. #: ___

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT & E ENVIRONMENTAL
DRILLING RIG: GEOPROBE
BORING NUMBER: 153 SB A7
DATE: 5-22-97
GEOLOGIST: HALE SIMPSON
DRILLER: FALUCCA

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks (153 SB ( ))	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
					black to	silty sand w/ ash	SM		0			
				A ▽	brown	and cinders, gravel	SM/GM	M (0002)	0			
				A	↓	size ↓	↓	W	0			
pH=7.5	4		4/4		↓	↓	↓	W (0204)	—			
					red-tan	silty sand	SM	W	0.4			
				A	light brown	↓	SM	W (0406)	0.4			
pH=13					↓		SM	W	0.4			
	9		4/4	A	green-grey	& slag matrix rare.	GM	W (0608)	0.4			
pH=13					↓	↓	GM	W	0			
				A	↓	↓	GM	W (0810)	0			
					↓	↓	GM	W	0			
pH=8	12		2.5/4		↓	↓	↓	—— (1012)	—			
pH=7					black	soft clay	CL	W	0			
			3.5	F?	↓	↓	↓	M (1214)	0			
				N	grey	clayey silt	ML					
					red	Fine uniform sand	SP	M	0			
pH=7	16		2.5/4		↓	↓	↓	—— (1416)	0			
					↓	↓	↓		0			
				A	↓	↓	↓	(1618)	0			
					↓	↓	↓		0			
pH=7	20		4/4	A 20' BOTM	↓	↓	↓	M-W (1820)	0			
								( )				
								( )				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 2" I.D. MACROCORE SAMPLER B: 0848 E: 0922

Drilling Area Background (ppm): ____

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT & E ENVIRONMENTAL
DRILLING RIG: GEOPROBE
BORING NUMBER: 153 SB A8
DATE: 5-22-97
GEOLOGIST: HALE SIMPSON
DRILLER: FALUCCA

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller-BZ**
						6" ASPHALT		153 SB ( )				
				0	brown	silty sand	SM	M	0			
				A	red-orn	sand (fine)/gravel (1-2")	GP	M (0002)	0			
				3.8	grey-green	silty sand w/ slag, cinders	SM	M	0			
	4		3/4			ash	SM	W (0204)	—			
					gets browner	gets laminated, light brown ash clayey silt		W	0			
				A				W (0406)	0			
								W	0			
	8		4/4	A	brown / tan	laminated clayey silt	ML	W (0608)	0			
						sampled bright	ML	M-W	0			
				A.		yellow band @ base	ML	M-W (0810)	0			
									—			
	12		2/4	F	12			— (1012)	—			
				N	brown	fine (some) to medium sand	SW	W	0			
				A		no organics	SW	W (1214)	0			
						darker in lower	SW	W	0			
	16		4/4	A			SW	W (1416)	0			
					17	grades sand	SW/SP	W	0			
				A	red	sand	SP	W (1615)	0			
							SP	W	0			
	20		4/4	A BSTM			SP	W (1820)	0			
				20'								
								( )				
								( )				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): ___

emarks: 2" I.D. MACROCORE SAMPLER B: 0930 E: 1015

Converted to Well: Yes ___ No ✓ Well I.D. #: ___

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT & E ENVIRONMENTAL
DRILLING RIG: GEOPROBE
BORING NUMBER: 153 SB A9
DATE: 5-22-97
GEOLOGIST: HALE SIMPSON
DRILLER: FALUCCA

Sample No. and Type or RQD	Depth (Ft) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
						6" ASPHALT		153 SB ( )				
					black	silty sand w/ ash/cinders	SM	M	0			
				A	tan	fine, well sorted sand	SP	M (0002)	0			
									—			
	4		2/4					——— (0204)	—			
					black/gray	silt / sand / gravel size	GM	W	0			
				A		slag w/ "frosty" matl	GM	W (0406)	0			
							GM	W	0			
	8		3/4				GM	W (0608)	—			
				A			GM	W	09			
					black	soft clay w/ wood	GM-CL	W (0810)	0			
									—			
	12		2/4		12			——— (1012)	—			
					tan - brown	fine to med. sand w/	SW	W	0			
				A		fine gravel (trace)	SW	W (1214)	0			
									—			
	16		2/4					——— (1416)	—			
					17			W	0			
				A	red	v. fine sand, uniform	SP	W (1615)	0			
								W	0			
	20		4/4	A 20' BOTM				W (1820)	0			
								( )				
								( )				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 2" I.D. MACROCORE SAMPLER B: 1022 E: 1100

Drilling Area Background (ppm): ___

Converted to Well: Yes ___ No ✓ Well I.D. #: ___

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT & E ENVIRONMENTAL
DRILLING RIG: GEOPROBE
BORING NUMBER: 153 SB A10
DATE: 5-22-97
GEOLOGIST: HALE SIMPSON
DRILLER: FALUCCA

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
						6" ASPHALT		153 SB ( )				
					black	silty sand w/ trace	SM		0			
				A	brown	slag fragments		M (0002)	0			
				A	green gray			W	0			
	4		3/4	?				W (0204)	0			
						sampled 1 large nodule yellow		W	0			
					tan / brown	clayey silt, layered	ML	W (0406)	0			
				A			ML	W	—			
	8		2.5/4	?				— (0608)	—			
								W	0			
				A wood	11.5		ML	W (0810)	0			
					dark brown	fine to medium sand, trace	SW	W	0			
	12		4/4	A	light brown	fine gravel / roots	SW	W (1012)	0			
							SW	W	0			
				A			SW	W (1214)	0			
				A 15	red	fine to medium sand	SW	W	0			
	16		3/4					— (1416)	0			
				16' BOTM								
								( )				
								( )				
								( )				
								( )				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 2" I.D. MACROCORE SAMPLER B: 1113 E: 1147

Drilling Area Background (ppm): ___

Converted to Well: Yes ___ No ✓ Well I.D. #: ___

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT & E ENVIRONMENTAL
DRILLING RIG: GEOPROBE
BORING NUMBER: 153 SB A11
DATE: 5- -97
GEOLOGIST: HALE SIMPSON
DRILLER: FALUCCA

Sample No and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
						6" ASPHALT		153 SB ( )				
					black	silty sand with slag	SM	M	2			
				A	↓	gravel	GRV	M (0002)	0			
				A	yellow-grey	SM, yellow grains	SM	M	1			
	4		3/4	▽				W (0204)	—			
					black	silty sand w/ some	SW	W	0			
				A		slag gravel (1/4"-1/2")	SW	W (0406)	0			
								W	0			
	9		4/4	A				W (0608)	0			
					black / tan	silt, sand, gravel size	GM	W	0			
				A	green	clay	GM	W (0810)	0			
									—			
	12		2/4	F	12			(1012)	—			
				N	brown	well graded fine to medium	SW		0			
					grades into	sand w/ trace fine gravel	SW	(1214)	0			
				A 13.5	red	no gravel in red	SW		0			
	16		2.5/4	16'				(1416)	—			
				BOTM								
								( )				
								( )				
								( )				
								( )				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 2" I.D. MACROCORE SAMPLER B: 1300 E: 1325

Drilling Area Background (ppm): ___

Converted to Well: Yes ___ No ✓ Well I.D. #: ___

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT & E ENVIRONMENTAL
DRILLING RIG: GEOPROBE
BORING NUMBER: 153 SB A12
DATE: 5-22-97
GEOLOGIST: HALE SIMPSON
DRILLER: FALUCCA

Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks (153 SB ( ))	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
					black	silty to medium coarse	SM	D	0			
				A	↓	sand made up of slag	SW	D (0002)	0			
						" "	SW	D	0			
	4		2/4			↓	↓	— (0204)	-			
				▽	↓	↓ more gravel/slag	GM	D	0			
				A	pink/red brown	clayey silt, layered	ML	M (0406)	0			
				A	tan	same vegetative debris	ML	M	0			
	9		4/4	• A'	black/green	(reed like)	ML	W (0608)	0			
				•	grey	clayey silt w/trace sand	ML	M	0			
				A	brown	fine to medium sand	SW	W (0810)	0			
									-			
	12		2/4					— (1012)	-			
				•	brown	sandy silt	ML	W-M	0			
				A	red	fine to medium sand + trace fgravel	SW	W (1214)	0			
				A 15	↓	v. fine, well sorted sand	SP	W	0			
	16		3/4	16' BOTM				(1416)	-			
								( )				
								( )				
								( )				
								( )				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 2" I.D. MACROCORE SAMPLER B: 1335 E: 1410

Drilling Area Background (ppm): ___

Converted to Well: Yes ___ No ✓ Well I.D. #: ___

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT & E ENVIRONMENTAL
DRILLING RIG: GEOPROBE
BORING NUMBER: 153 SB A13
DATE: 5-22-97
GEOLOGIST: HALE SIMPSON
DRILLER: FALUCCA

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks (153 SB ( ))	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
					black	silt, sand, fine gravel	SW	D	0			
				A		size slag, ash, brick	SW	D (0002)	0			
						etc	SW	D	0			
	4		4/4	A ▽			SW	D (0204)	0			
							SW	W	0			
				A			SW	W (0406)	0			
							SW	W	–			
	9		2/4			gravel-slag	SW	—— (0608)	–			
						gets more	SW/GM	W	0			
				10	F/N?	dominant	GM	W (0810)	0			
						soil, black clay, silt			–			
	12		2/4					—— (1012)	–			
									–			
				14				—— (1214)	–			
					red	fine to coarse sand	SW	W	0			
	16		2/4	A 16'			SW	W (1416)	0			
				ISOIM								
								( )				
								( )				
								( )				
								( )				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 2" I.D. MACROCORE SAMPLER B: 1410 E: 1440

Drilling Area Background (ppm): ____

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO. BORING NO.: 153MWA13T
PROJECT NUMBER: 1A73 DATE: 4-28-98
DRILLING COMPANY: CT&E ENVIRONMENTAL GEOLOGIST: CONTI
DRILLING RIG: MOBILE B-61 DRILLER: J LEWIS

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification*	USCS*	Remarks	PID/FID Reading (ppm): Sample	Breathing Zone	Borehole	Driller B.Z.
	0.0						8¼" HSA TO 14						
							SET 6" CAS TO 14'						
				6" STEEL CASING			NO SAMPLING						
							SEE BORING LOG						
	5.0						153 SB A13 FOR						
							DETAILS		SHALLOW WELL				
									153MWA13 IS				
									ALSO INSTALLED NEAR THIS WELL.				
									(SOUTH OF THIS WELL)				
	10.0												
				14'									
	15.0												
S-1 C		7/7	1.3/2		DENSE	RED BRN	F/M SAND - GRADES	SP	MOIST → WET (1517)	0			
0840	17.0	15/20		A			TO SILTY SAND	SM	(VOA HERE)	0			
	20.0												
S-2 C		10/13	1.6/2	•	M DENSE		F/M SAND TO SILTY	SP	WET (2022)	0			
0855	22.0	12/15		A			SAND	SM	TR GRAVEL IN WASH PORTION OF SAMPLE.	0			

* When rock coring, enter rock brokeness.

Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): [ ]

Remarks: 6" STEEL CASING.

Converted to Well: Yes ✓ No _____ Well I.D. #: 153 MWA13T

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT&E ENVIRONMENTAL
DRILLING RIG: MOBILE B-61
BORING NO.: 153 MW A1BT
DATE: 5/6/99
GEOLOGIST: CONTI
DRILLER: J LEWIS

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density (Consistency) or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole	Drillier BZ
S-3	25.0	14/14	1.6/2	•	DENSE	RED BRN	F/M SAND - TO SILTY	SP	WET 4(2527)	0			
0910	27.0	12/22		A			SAND - FEW V. THIN CLAY STRINGERS	/SM	STIL GRAVEL IN WASH.	0			
	30.0												
S-4		14/15	1.8/2	•	M DENSE		SILTY VF SAND	SM	WET 4(3032)	0			
@ 0935	32.0	9/11		A			TO SANDY SILT	ML	MICACEOUS	0			
	35.0												
S-5		25/6	1.5/2	•	M DENSE		SILTY SAND - TR CLAY	SM	WET 4(3537)	0			
0955	37.0	6/6		A			TR F. GRAVEL		MICACEOUS COARSER THAN	0			
									ABOUE.				
	40.0												
S-6		31/20	0		V DENSE		NO REC.		~~(4042)~~				
1020	42.0	20/31											
	43.0												
S-7		17/17	1.8/2	•	DENSE	RED BRN	SANDY SILT - TR CLAY	SM	WET 4(4345)	0			
@ 1040	45.0	18/22		A				/ML	NO GRAVEL	0			
S-8		WOR/14	1.6/2	•			SILTY VF SAND - TR	SM	WET 4(4547)	0			
@ 1100	47.0	20/18		A			CLAY		MICACEOUS	0			
									VOA HERE ALSO.				

* When rock coring, enter rock brokeness.

Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppmv):

Remarks:

Converted to Well: Yes ✓ No _____ Well I.D. #: 153 MW A1BT

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
RILLING COMPANY: CT&E ENVIRONMENTAL
DRILLING RIG: MOBILE B-61
BORING NO.: 153MWA13T
DATE: 5-6-99
GEOLOGIST: CONTI
DRILLER: J LEWIS

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole	Driller BZ
S-9	50.0	14/12	1.7/2	51.5	DENSE	RED BRN	SILTY VF SAND - TR CLAY	SM	WET K5052	0			
1125	52.0	21/16		A	DENSE	RED BRN	SILTY SAND - TR CLAY AND GRAVEL	SC SM	WET	0			
S-1		3"/2'							POOR REC - NOT				
1215	54.0						153 DTA13T 5254		ENOUGH TO SEND TO LAB				
S-10 C		14/20	1.1/2		DENSE		SILTY VF SAND	SM	(WAS TILL) K5456	0			
1235	56.0	17/18		A					NOT TILL MATL ? NO GRAVEL	0			
	58.0			58±									
S-11 C		23/37	1.6/2		V DENSE	RED BRN	SANDY SILTY TILL	SM	MOIST K5860	0			
1300	60.0	37/45		A			TR GRAVEL			0			
				60' BOTM			SET SCREEN						
							58 → 43 = 15'						
							SAND TO 40'						

* When rock coring, enter rock brokeness.

Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm):

Converted to Well: Yes ✓ No Well I.D. #: 153 MWA13T

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT & E ENVIRONMENTAL
DRILLING RIG: GEOPROBE
BORING NUMBER: 153 SB A14
DATE: 5-22-97
GEOLOGIST: HALE SIMPSON
DRILLER: FALUCCA

Sample No. and Type or RQD	Depth (Ft.) or Run No	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks (153 SB ( ))	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
				0	black	silt, sand, fine slag	SW	D	0			
				A	↓	gravel	SW	m (0002)	0			
					1	1			—			
	4		2/4		1	1		— (0204)	—			
				▽	↓	↓	SW	m	0			
								(0406)	/			
									/			
	9		1/4	E	8			— (0608)	/			
				N	brown to red	fine to medium sand	SW	W-S	0			
				A				W-S (0810)	—			
									—			
	12		1.5/4	12				— (1012)	—			
					red	fine to coarse sand,	SW	S	0			
						trace fine gravel	SW	S (1214)	0			
							SW	S	0			
	16		/4	16'	↓	↓	SW	S (1416)	0			
				BOTM								
								( )				
								( )				
								( )				
								( )				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 2" I.D. MACROCORE SAMPLER B: 1445 E: 1505

Drilling Area Background (ppm): ____

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT & E ENVIRONMENTAL
DRILLING RIG: GEOPROBE
BORING NUMBER: 153 SB 15
DATE: 5-22-97
GEOLOGIST: HALE SIMPSON
DRILLER: FALUCCA

Sample No. and Type or RQD	Depth (FL) or Run No	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks (153 SB ( ))	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
					black	6" top soil over silty sand	SM	D	0			
				A		w/slag, cinders, etc	SM	D (0002)	0			
				A			SM	D	0			
	4		3/4				SM	(0204)	—			
							SM	D	0			
				A				(0406)	—			
									—			
	9		1.5/4					(0608)	—			
				A		Slag-gravel, predominant	GM	W	0			
								(0810)	—			
									—			
	12		1/4					(1012)	—			
									0			
					black	soft clay	CL	W (1214)	0			
					red	fine to coarse sand w/	SW	W	0			
	16		3/4	16' BOTM		fine gravel	SW	(1416)	—			
								( )				
								( )				
								( )				
								( )				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 2" I.D. MACROCORE SAMPLER B:1515 E:1540

Drilling Area Background (ppm): ___

Converted to Well: Yes ___ No ✓ Well I.D. #: ___

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT&E ENVIRONMENTAL
DRILLING RIG: GEOPROBE
BORING NO.: 153SBA15A, B, C
DATE: 11/19/98
GEOLOGIST: CONTI
DRILLER: TOM HANLEY

Sample No. and Type or RQD	Depth (Ft) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS	Remarks	PID/FID Reading (ppm): Sample	Sample BZ	Borehole	Drillers BZ
							[153SBA15A]						
S-1	0.0			•	LOOSE	BRN	SILTY SAND - TR ROCK		DAMP → MOIST • 0-1	0			
@ 1140			3/3	A		GRAY	ASH, ROOTS, FEW WHITE SPECS		4(0002) @1140	0			
	3.0			3'			(FILL)						
				BOTM									
	0.0						[153SBA15B]						
				•	LOOSE	BRN	SILTY SAND - TR ROCK		MOIST • (0.5-1)	0			
S-1 @ 1147			2/3	A		GRAY	PLASTIC, SLAG, FEW WHITE SPECS.		4(0002) @1147	0			
	3.0			3'			(FILL)						
				BOTM									
	0.0						[153SBA15C]						
S-1 @ 1155			2.7/3	A •	LOOSE	BRN GRAY	SILTY SAND - BRICK, GLASS, ASH, ROOTS, PORCELIN		MOIST → DAMP • (1-2') 4(0002) @1155	0			
	3.0			3'			(FILL)						
				BOTM					NO EVIDENCE OF RES IN 15C				
							3 BORINGS - THIS SHT.		A = 20' SOUTH OF C = 20' NORTH	ORIG "		LOC "	
									B=				

When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: _____

Drilling Area Background (ppm): _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT&E ENVIRONMENTAL
DRILLING RIG: MOBILE B61
BORING NO.: 153 MW A15
DATE: 4-30-99
GEOLOGIST: CONTI
DRILLER: LEWIS

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
0825	0.0						4¼" HSA TO 13'						
							FOR DETAILS - SEE						
							BORING 153SBA15						
							FOR LITHOLOGY						
	5.0												
	10.0												
	13.0			13' BOT.									
							BOTM HSA @ 13'						
									SET SCR 4 TO 13				
									SAND TO 3'				
									PELETS TO 2'				
									THEN FLUSH MT.				

* When rock coring, enter rock brokeness.

Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: START @ 0825 HRS 4/30/99 - NO SAMPLING. BASED DEPTH OF 153SBA15 DRILLED EARLIER.

Drilling Area Background (ppm):

Converted to Well: Yes ✓ No _____ Well I.D. #: 153 MW A15

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT & E ENVIRONMENTAL
DRILLING RIG: GEOPROBE
BORING NUMBER: 153 SB A16
DATE: 5-22-97
GEOLOGIST: HALE SIMPSON
DRILLER: FALUCCA

Sample No. and Type or RQD	Depth (Ft.) or Run No	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks (153 SB ( ))	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
				•	brown	6" topsoil over silty sand	SM	D	0			
				A	black	w/ slag, cinders ash.	SM	D (0002)	0			
									—			
	4		2/4					(0204)	—			
				•					0			
				A				D (0406)	0			
								D	—			
	8		2/4	▽				(0608)	—			
				A		gravelly	SM	W	0			
				•		clayey silt, layered	ML	M (0810)	0			
									—			
	12		2/4					(1012)	—			
				• 13	F black	soft clay	CL	W	0			
				A N	? tan	fine to medium sand	SW	W (1214)	0			
				• 15	red	gravelly silty sand	SW	W	0			
	16		3/4			grades to almost completely	GM	W (1416)	—			
				•			GM	W	0			
				A		gravel @ base	GP	W (1618)	0			
						↓	GP	W	0			
	20		4/4	A 20'		fine, well sorted sand	SP	W (1820)	0			
				BOTM								
								( )				
								( )				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 2" I.D. MACROCORE SAMPLER B: 1558 E: 1630

Drilling Area Background (ppm): ___

Converted to Well: Yes ___ No ✓ Well I.D. #: ___

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT & E ENVIRONMENTAL
DRILLING RIG: GEOPROBE
BORING NUMBER: 153 SB A17
DATE: 5-27-97
GEOLOGIST: HALE SIMPSON
DRILLER: FALUCCA

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks (153 SB ( ))	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
					tan to	6" topsoil (cinders)	SW	M	0			
				A	brown	over fine to medium	SW	M (0002)	0			
				A	↓	sand w/some rk fragments	SW	M	0			
	4		3/4				SW	(0204)	—			
					yellowish	no rk. frags	SW	M	0			
				A ▽	↓	here.	SW	M (0406)	0			
									—			
	8		2/4					— (0608)	—			
					black	cinders (gravel size)	GM	W	0			
				A	↓	w/silt / sand	GM	W (0810)	0			
									—			
	12		1.5/4					— (1012)	—			
									—			
								— (1214)	—			
									—			
	16		0.5/4	F 16	↓	↓		— (1416)	—			
				N	light grey green	silt w/ trace fine gravel	ML	M	0			
				A 18	red-grey	fine to medium coarse	SW	(1618)	0			
						sand			—			
	20		2/4	20'				— (1820)	—			
				BOTM								
								( )				
								( )				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 2" I.D. MACROCORE SAMPLER B: 1120 E: 1200

Drilling Area Background (ppm): ___

Converted to Well: Yes ___ No ✓ Well I.D. #: ___

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT & E ENVIRONMENTAL
DRILLING RIG: GEOPROBE
BORING NUMBER: 153 SB A&B
DATE: 5-29-97
GEOLOGIST: HALE SIMPSON
DRILLER: FALUCCA

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks (153 SB ( ))	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
				0	black	6" topsoil over silty	SM	M	6			
				A	↓	Sand w cinders	SM	M (0002)	0			
									–			
	4		2/4					(0204)	–			
								M	0			
				A	↓	↓		M (0406)	0			
									–			
	9		2/4					(0608)	–			
						more cinders	GM	W	0			
				A	↓	↓	GM	W (0810)	0			
									–			
	12		2/4					(1012)	–			
					12.5 ↓		GM					
				A N	gray	clay silt roots	ML					
				13.5	red.	fine to medium coarse sand	SW	(1214)				
	16		1.5/4	16'				(1416)				
				BOTM								
								( )				
								( )				
								( )				
								( )				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 2" I.D. MACROCORE SAMPLER B: 1208 E: 1235

Drilling Area Background (ppm): ___

Converted to Well: Yes ___ No ✓ Well I.D. #: ___

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO. BORING NO.: 153 SB A18 A, B, C
PROJECT NUMBER: 1A73 DATE: 11/19/98
DRILLING COMPANY: CT&E ENVIRONMENTAL GEOLOGIST: CONTI
DRILLING RIG: GEOPROBE. DRILLER: TOM HANLEY

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sample BZ	Borehole	Drillers Eye
							[153SBA18A]						
	0.0			A	LOOSE	BRN	SILTY SAND - TR ASH	SM	MOIST (0002)	0			
S-1 @			3/3	•		TO GRAY	WOOD, ROOTS (FILL)	SM	TOOK @1100 SAMPLE	0			
18A 1100	3.0								1-2 BASED ON SOME VISUAL	0			
				BOT @ 3'					EVIDENCE OF BRN RES ≈ 1.5'				
	0.0						[153 SB A18B]		(0002)				
S-1				•	LOOSE	BRN	SILTY SAND - TR PLASTIC	SM	@1112 MOIST	0			
@ 1112			2/3	A			ROCK FRAGS, SLAG (FILL)	SM	0-1 - FEW WHITE SPECS NOTICED	0			
18B	3.0			3'					0-1' INT.	0			
				BOTM									
	0.0						[153SBA18C]		(0002)				
S-1				A	LOOSE	BRN	SILTY SANDY FILL —	SM	@1120 MOIST	0			
18C @ 1120			3/3	•		GRAY	ROOTS - ASH, ROCK FRAG FEW WHITE SPECS @ 1.5	SM	• 1-2 BASED ON	0			
	3.0								FEW WHITISH SPECS.	0			
				3' BOTM									
							[NOTE 3 SEPARATE BORINGS HERE.]		A, C - 20' S, E N OF ORIGINAL LOCATION				
									B - NEAR FENCE DIRECTLY EAST (18') OF ORIG LOCATION				

* When rock coring, enter rock brokeness.

` Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: _____

Drilling Area Background (ppm): ____

Converted to Well: Yes ____ No ✓ Well I.D. #: _____

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT & E ENVIRONMENTAL
DRILLING RIG: GEOPROBE
BORING NUMBER: 153 SB A19
DATE: 5-27-97
GEOLOGIST: HALE SIMPSON
DRILLER: FALUCCA

Sample No. and Type or RQD	Depth (Ft) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks (153 SB ( ))	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
				0	black	6" topsoil over silty	SM	M	0			
				A		Sand w/some fine	SM	M (0002)	0			
				4	↓	gravel cinders	SM	M	0			
	4		3/4			glass	SM	M (0204)	—			
				0 ▽		some large	SM	M	0			
				A	↓	gravel present	SM	W (0406)	0			
									—			
	9		2/4	1				— (0608)	—			
				0		mostly cinder	GM	W	0			
				A	↓	gravel/rock frag's	GM	W (0810)	0			
									—			
	12		2/4	F				— (1012)	—			
				A N	gray	fine uniform sand	SP	S	0			
								(1214)	—			
									—			
	16		1/4					— (1416)	—			
					gray	silt and gravel	GM	W	0			
								— (1618)	—			
									—			
PS	20		0.25/4	20'				— (1820)	—			
				BOTM								
								( )				
								( )				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 2" I.D. MACROCORE SAMPLER B: 1325 E: 1400

Drilling Area Background (ppm): ___

Converted to Well: Yes ___ No ✓ Well I.D. #: ___

BORING LOG

Page ___ of ___

PROJECT NAME: ALLIEDSIGNAL-HUDSON CO.
PROJECT NUMBER: 1A73
DRILLING COMPANY: CT & E ENVIRONMENTAL
DRILLING RIG: GEOPROBE
BORING NUMBER: 153 SB A20
DATE: 5-27-97
GEOLOGIST: HALE SIMPSON
DRILLER: FALUCCA

Sample No. and Type or RQD	Depth (FL) or Run No	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks (153 SB ( ))	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
				0	black	silty sand / cinders	SM	M	0			
				A	red / brown	sandy silt w/ rk frags	ML	M (0002)	0			
									—			
	4		2/4				↓	— (0204)	—			
						sandier @ base	SM	M	0			
				A ▽	black / brown	cinder gravel / silt / sand	SM	M (0406)	0			
									—			
	8		2/4				↓	— (0608)	—			
							SM	W	0			
				A			SM	W (0810)	0			
									—			
	12		2/4				SM	— (1012)	—			
			12-5	A • N	gray	fine uniform sand	SP	S	0			
						coarsens to a	SP	(1214)	—			
						fine through	SP/SW		—			
	16		1/4			medium coarse	SW	— (1416)	—			
						sand.	SW	S	6			
				A			SW	S (1618)	6			
				• 19'	red		SW	S	0			
	20		4/4	A 20'	↓	↓	SW	S (1820)	0			
				BOTM								
								( )				
								( )				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 2" I.D. MACROCORE SAMPLER B: 1414 E: 1500

Drilling Area Background (ppm): ___

Converted to Well: Yes ___ No ✓ Well I.D. #: ___

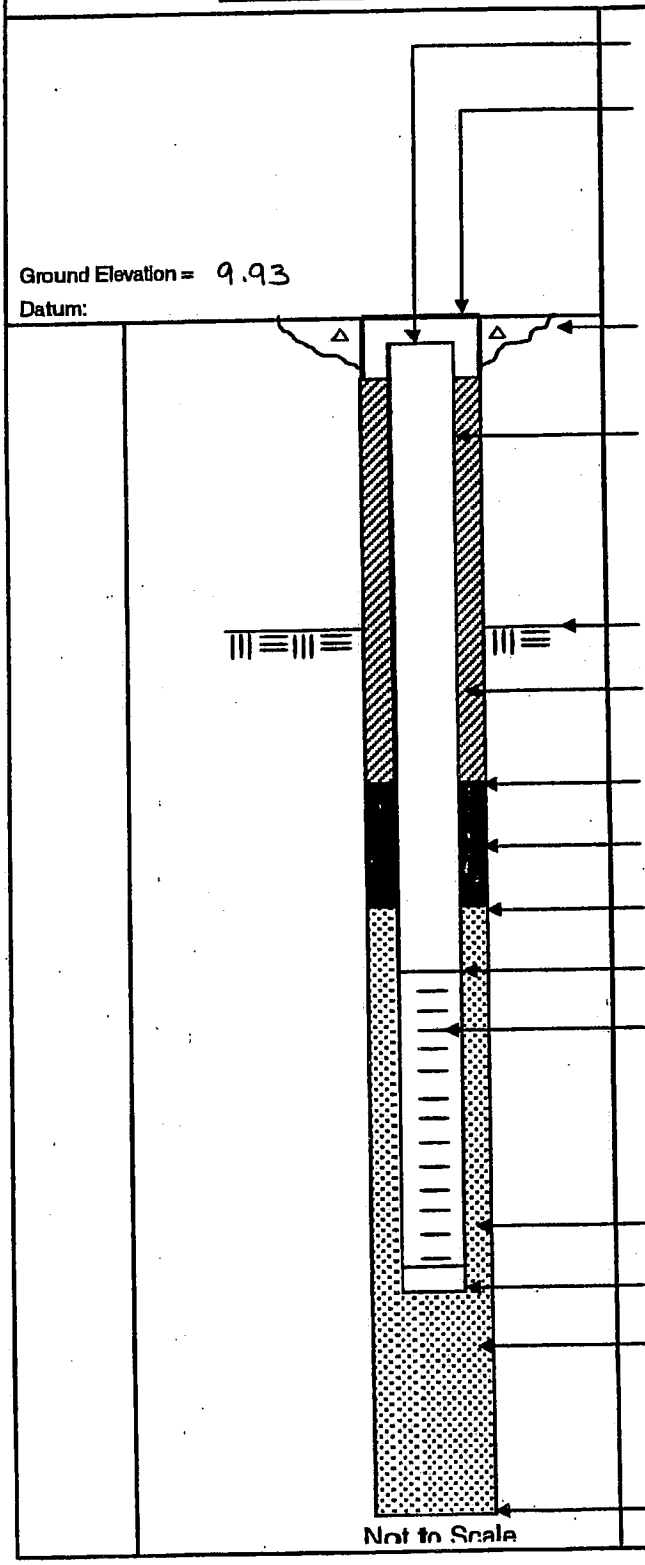
Tetra Tech NUS, Inc.

WELL No.: 153MWA13

MONITORING WELL SHEET

PERMIT No.: 2652440

PROJECT:	ALLIEDSIGNAL	DRILLING Co.:	CT&E	BORING No.:	153 MW A 13
PROJECT No.:	1A73	DRILLER:	J. LEWIS	DATE COMPLETED:	12/04/98
SITE:	MORRIS CANAL	DRILLING METHOD:	H S A	NORTHING:	
GEOLOGIST:	CONTI	DEV. METHOD:	PUMPING	EASTING:	



Elevation / Depth of Top of Riser:		9.62 / —
Elevation / Height of Top of Surface Casing:		9.95 / —
I.D. of Surface Casing:	4¼"	
Type of Surface Casing:	STEEL	
Type of Surface Seal:	FLUSH MOUNT	
I.D. of Riser:	2"	
Type of Riser:	PVC	
Borehole Diameter:	9"	
Elevation / Depth Top of Rock:		/ NA
Type of Backfill:	CEMENT GROUT	
Elevation / Depth of Seal:		8.93 / 1.0
Type of Seal:	BENT. CHIPS	
Elevation / Depth of Top of Filter Pack:		7.93 / 2.0
Elevation / Depth of Top of Screen:		5.93 / 4.0
Type of Screen:	PVC	
Slot Size x Length:	10 X 6'	
I.D. of Screen:	2"	
Type of Filter Pack:	SILICA SAND	
Elevation / Depth of Bottom of Screen:		-.07 / 10.0
Elevation / Depth of Bottom of Filter Pack:		-.07 / 10.0
Type of Backfill Below Well:	NA	
Elevation / Total Depth of Borehole:		-.07 / 10.0

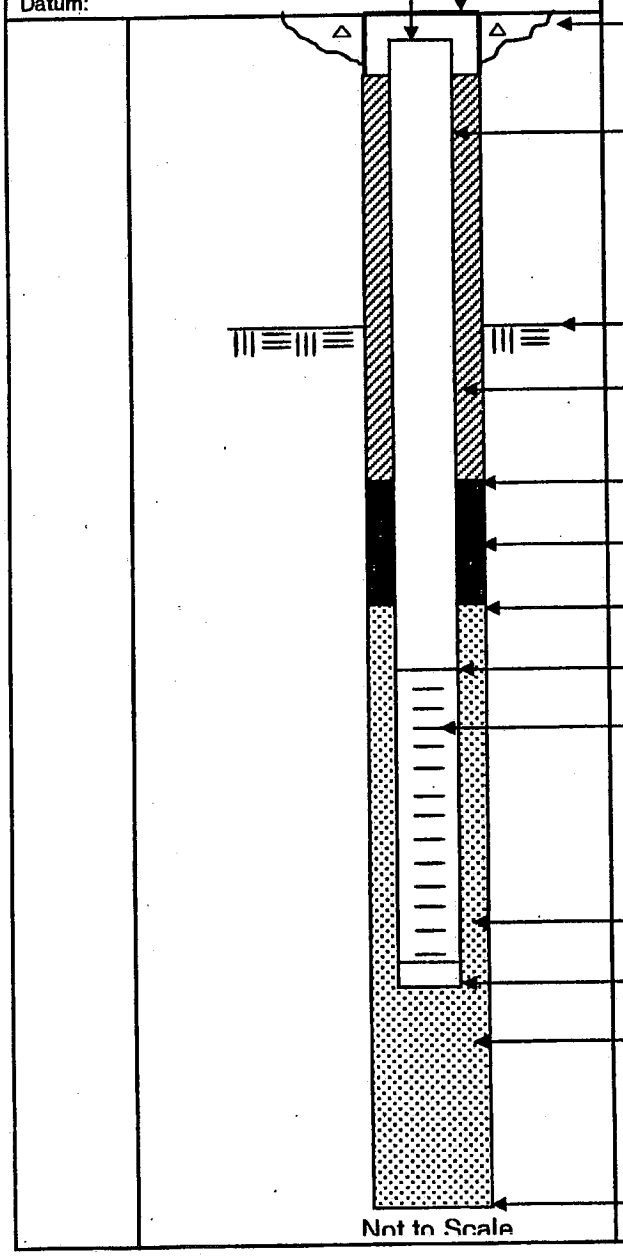
Tetra Tech NUS, Inc.

WELL No.: 153MWA15

MONITORING WELL SHEET

PERMIT No.: 2653343

PROJECT:	ALLIEDSIGNAL	DRILLING Co.:	CT&E	BORING No.:	153MWA15
PROJECT No.:	1A73	DRILLER:	J. LEWIS	DATE COMPLETED:	04/30/99
SITE:	MORRIS CANAL	DRILLING METHOD:	H S A	NORTHING:	
GEOLOGIST:	CONTI	DEV. METHOD:	PUMPING	EASTING:	



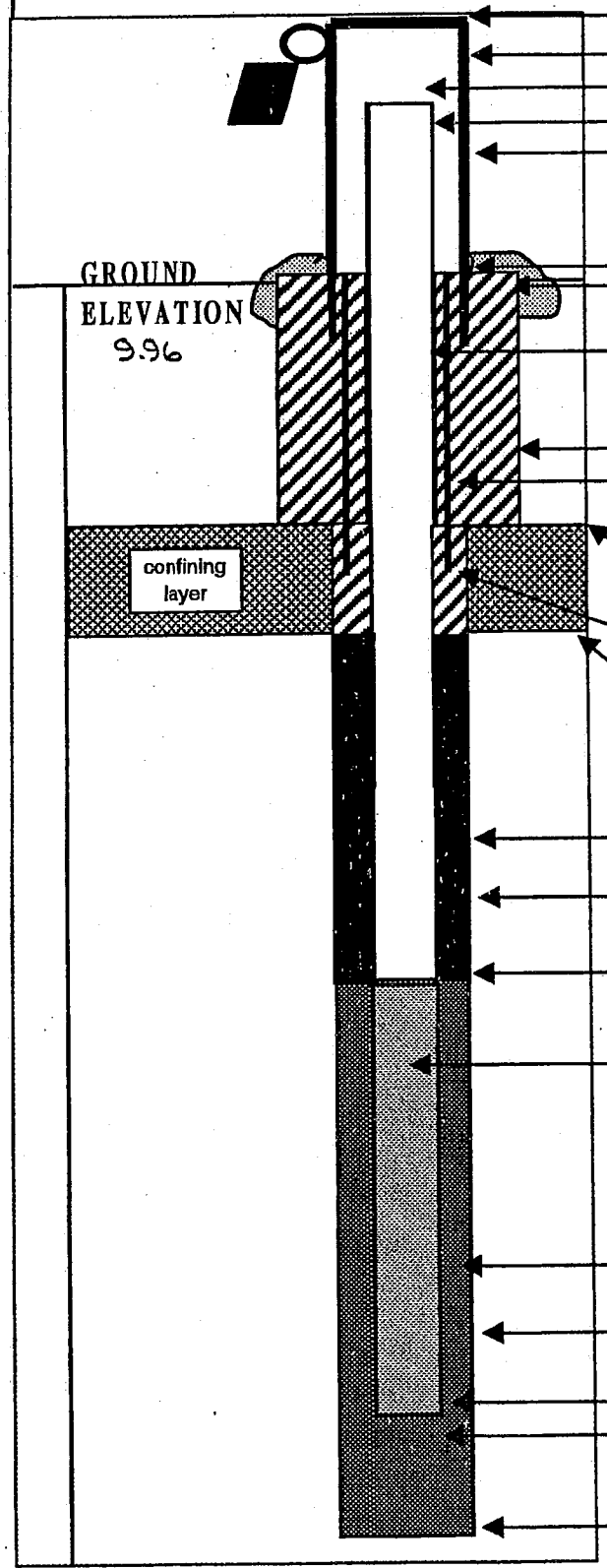
Elevation / Depth of Top of Riser:		11.00 / —
Elevation / Height of Top of Surface Casing:		11.38 / —
I.D. of Surface Casing:	6"	
Type of Surface Casing:	STEEL	
Type of Surface Seal:	FLUSH MOUNT	
I.D. of Riser:	2"	
Type of Riser:	PVC	
Borehole Diameter:	9"	
Elevation / Depth Top of Rock:		/ NA
Type of Backfill:	CEMENT GROUT	
Elevation / Depth of Seal:		10.32 / 1.0
Type of Seal:	BENT. CHIPS	
Elevation / Depth of Top of Filter Pack:		9.32 / 2.0
Elevation / Depth of Top of Screen:		8.32 / 3.0
Type of Screen:	PVC	
Slot Size x Length:	10 X 9'	
I.D. of Screen:	2"	
Type of Filter Pack:	#0 SAND	
Elevation / Depth of Bottom of Screen:		-1.68 / 13.0
Elevation / Depth of Bottom of Filter Pack:		-1.68 / 13.0
Type of Backfill Below Well:	NA	
Elevation / Total Depth of Borehole:		-1.68 / 13.0

BORING NO.: 153MWA13T

Tetra Tech NUS, Inc. **CONFINING LAYER MONITORING WELL SHEET**

PERMIT No. 2653342

PROJECT:	ALLIED SIGNAL	DRILLING Co.:	CT & E	BORING No.:	153MWA13T
PROJECT No.:	1A73	DRILLER:		DATE COMPLETED:	5/4/99
SITE:	HUDSON CO. NJ	DRILLING METHOD:	MUD ROTARY	NORTHING:	
GEOLOGIST:	CONTI	DEV. METHOD:	SURF. PUMP	EASTING:	



ELEVATION OF TOP OF SURFACE CASING: 9.99

STICK -UP TOP OF SURFACE CASING: -

ELEVATION OF TOP OF RISER PIPE: 9.34

RISER STICK-UP ABOVE GROUND SURFACE:

I.D. OF SURFACE CASING: 4 1/4"

TYPE OF SURFACE CASING: STEEL (FLUSH MOUNT)

GROUND ELEVATION: 9.96

TYPE OF SURFACE SEAL: CONCRETE PAD

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 10"

PERM. CASING I.D. : 6"

TYPE OF CASING & BACKFILL: CEMENT BENT. GROUT

ELEVATION / DEPTH TOP CONFINING LAYER -2.04 / 12.0

ELEVATION / DEPTH BOTTOM OF CASING -4.04 / 14.0

ELEVATION / DEPTH BOT. CONFINING LAYER -5.04 / 15.0

ELEVATION / DEPTH OF SEAL: -27.04 / 37.0

TYPE OF SEAL: GRANULAR BENTONITE

ELEVATION / DEPTH TOP OF FILTER PACK: -30.04 / 40.0

ELEVATION / DEPTH TOP OF SCREEN: -33.04 / 43.0

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: .10 X 10'

I.D. OF SCREEN: 2"

TYPE OF FILTER PACK: MORIE #1

BOREHOLE DIAMETER BELOW CASING: 5 7/8 "

ELEVATION / DEPTH BOTTOM OF SCREEN: -48.04 / 58.0

ELEVATION / DEPTH BOTTOM OF FILTER PACK: -48.04 / 58.0

TYPE OF BACKFILL BELOW WELL: NA

ELEVATION / DEPTH OF BOREHOLE: -48.04 / 58.0

TABLE 2-1

SOIL BORING SUMMARY
STUDY AREA 5 (NJDEP SITES 079, 090, 153, AND 184)
ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Bo in Num e	G oun Ele ation (ft MSL)	Date Complete	Total Dept (ft.)	Con e te to Well
ROUTE 440 VEHICLE CORPORATION				
079-SB-A02	8.5	5/14/97	16	079-MW-A02
079-SB-A04	10.0	5/14/97	16	NO
079-SB-B01	9.4	5/14/97	16	NO
079-SB-B02	10.5	11/20/98	12	NO
079-SB-B05	10.6	5/14/97	16	NO
079-SB-C02	10.6	5/14/97	16	NO
079-SB-C04	11.4	5/14/97	16	NO
079-SB-C06	11.1	5/14/97	12	079-MW-C06
079-SB-C07	12.8	5/14/97	12	NO
079-SB-C08	14.1	8/28/97	16	NO
079-SB-D05	11.7	5/14/97	16	NO
079-SB-D06	12.6	5/14/97	12	NO
BALDWIN STEEL				
090-SB-A14	17.2	5/13/97	16	NO
090-SB-B02	13.0	5/13/97	20	NO
090-SB-B04	13.3	5/13/97	16	NO
090-SB-B08	15.2	5/13/97	16	NO
090-SB-B10	16.6	5/13/97	12	NO
090-SB-B12	17.5	5/13/97	16	NO
090-SB-C03	15.2	5/12/97	16	NO
090-SB-C13	16.7	5/13/97	12	NO
090-SB-D02	14.5	5/12/97	20	NO
090-SB-D14	18.6	5/9/97	12	090-MW-F14
090-SB-E01	14.0	5/12/97	20	090-MW-E01
090-SB-E03	15.3	5/12/97	16	NO
090-SB-F10	16.2	5/9/97	16	NO
090-SB-F12	18.0	5/9/97	12	NO
090-SB-F14	21.0	5/9/97	16	NO
FORMER MORRIS CANAL				
153-SB-A01	8.9	5/21/97	16	NO
153-SB-A02	9.1	5/21/97	16	NO
153-SB-A03	10.5	5/21/97	16	NO
153-SB-A04	11.1	5/21/97	16	NO

TABLE 2-1

SOIL BORING SUMMARY
STUDY AREA 5 (NJDEP SITES 079, 090, 153, AND 184)
ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Bo in Num e	G oun Ele ation (ft MSL)	Date Complete	Total Dept (ft.)	Con e te to Well
153-SB-A05	12.1	5/21/97	16	NO
153-SB-A06	12.8	5/22/97	24	NO
153-SB-A07	12.3	5/22/97	20	NO
153-SB-A08	11.7	5/22/97	20	NO
153-SB-A09	11.1	5/22/97	20	NO
153-SB-A10	10.8	5/22/97	16	NO
153-SB-A11	10.8	5/22/97	16	NO
153-SB-A12	10.1	5/22/97	16	NO
153-SB-A13	9.7	5/22/97	16	153-MW-A13T
153-SB-A14	9.9	5/22/97	16	NO
153-SB-A15	11.3	5/22/97	16	153-MW-A15
153-SB-A16	11.1	5/22/97	20	NO
153-SB-A17	11.7	5/27/97	20	NO
153-SB-A18	11.7	5/27/97	16	NO
153-SB-A19	11.2	5/27/97	20	NO
153-SB-A20	10.9	5/27/97	20	NO
M. I. HOLDINGS				
184-SB-A01	9.6	6/10/98	16	NO
184-SB-A02	9.5	6/10/98	16	NO
184-SB-A03	8.5	6/10/98	12	NO
184-SB-A04	7.6	6/10/98	11	NO
184-SB-A05	7.9	6/10/98	12	NO
184-SB-A06	8.8	6/10/98	12	NO
184-SB-A07	8.4	6/10/98	12	NO
184-SB-A08	8.3	6/10/98	12	NO
184-SB-A09	8.8	6/12/98	12	NO
184-SB-C02	8.5	6/12/98	12	184-MW-C02
184-SB-C10	15.5	6/12/98	16	184-MW-C10
184-SB-E10	14.4	6/12/98	16	184-MW-E10

TABLE 2-2

MONITORING WELL SUMMARY
STUDY AREA 5 (SITES 079, 090, 153, AND 184)
ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

MONITORING WELL NUMBER	DATE INSTALLED	HYDRAULIC CONDUCTIVITY (ft a)	SCREENED INTERVAL (feet s)	WELL TYPE	TOTAL DEPTH (ft s)	DATE DEVELOPED	FLUSH MOUNT OR STICKUP	NEW JERSEY WELL PERMIT NUMBER
ROUTE 440 VEHICLE CORP.								
079-MW-A02	5/16/1997		3 TO 13	2" PVC	13.5	5/20/1997	FLUSH	2647490
079-MW-C06	5/16/1997	0.26	3 TO 13	2" PVC	13.5	5/20/1997	FLUSH	2647491
BALDWIN STEEL								
090-MW-EO1	5/19/1997	1.59	4 TO 14	2" PVC	14.0	5/20/1997	STICK UP	2647486
090-MW-F14	5/19/1997		5 TO 15	2" PVC	15.5	5/20/1997	FLUSH	2647487
FORMER MORRIS CANAL								
153-MW-A13	12/4/1998		4 TO 10	2" PVC	10.0	12/15/1998	FLUSH	2652440
153-MW-A13T	5/6/1999	0.13	43 TO 58	2"PVC	58	5/12/1999	FLUSH	2653342
153-MW-A15	4/30/1999		3 TO 13	2" PVC	13	5/12/1999	FLUSH	2653343
M.I. HOLDINGS								
184-MW-C02	6/16/1998		3 TO 8	2" PVC	8.0	6/17/1998	FLUSH	2651130
184-MW-C10	6/16/1998	1.15	6 TO 16	2" PVC	16.0	6/17/1998	FLUSH	2651131
184-MW-E10	6/16/1998		6 TO 16	2" PVC	16.0	6/17/1998	FLUSH	2651132
RYERSON STEEL								
117-MW-A05*	NA		NA	4" PVC	~16.5	8/20/1998	FLUSH	NA
117-MW-A14*	NA		NA	4" PVC	~17	8/20/1998	FLUSH	NA
117-MW-A62*	NA		NA	4" PVC	~15	8/19/1998	FLUSH	NA
117-MW-A85*	NA		NA	4" PVC	~15	8/20/1998	FLUSH	NA
117-MW-A89*	NA		NA	4" PVC	~16.5	8/21/1998	FLUSH	NA
117-MW-A99*	NA		NA	4" PVC	~14.5	8/21/1998	FLUSH	NA

* Wells installed by others.

TABLE 2-3

WATER LEVEL MEASUREMENTS
STUDY AREA 5
ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Well Number	Reference Point Elevation (ft. msl)	November 18, 1997		August 11, 1999	
		Depth to Water (ft)	Groundwater Elevation (ft. msl)	Depth to Water (ft)	Groundwater Elevation (ft. msl)
079-MW-A2	8.09	4.13	3.96	3.45	4.64
079-MW-C6	10.93	4.96	5.97	5.45	5.48
090-MW-F14	20.56	9.38	11.18	10.33	10.23
090-MW-E1	16.62	9.45	7.17	9.64	6.98
117-MW-A5	18.5/18.45(1)	12.18	6.32	NA	
117-MW-A14	17.38/17.33(1)	14.44	2.94	NA	
117-MW-A62	18.37/18.29(1)	14.6	3.77	11.82	6.47
117-MW-A85	17.45/17.38(1)	12.97	4.48	12.19	5.19
117-MW-A89	13.19/13.15(1)	10.3	2.89	8.86	4.29
117-MW-A99	15.96/15.92(1)	10.7	5.26	9.14	6.78
153-MW-A13	9.62	NA	NA	6.98	2.64
153-MW-A13T	9.34	NA	NA	6.42	2.92
153-MW-A15	11	NA	NA	8.44	2.56
184-MW-C2	8.32	NA	NA	3.62	4.7
184-MW-C10	15.18	NA	NA	6.61	8.57
184-MW-E10	13.88	NA	NA	7.93	5.95

1 - Wells resurveyed prior to second round of water level readings.

TABLE 2-4

ANALYTICAL METHODS
STUDY AREA 5 (NJDEP SITES 079, 090, 177, 153, AND 184)
ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Parameter	Liquid Samples			Soil Samples		
	Method	Detection Limit	Holding Time	Method	Detection Limit	Holding Time
Total Chromium	ILM03.0 (ICP)	CRDL	6 months	ILM03.0 (ICP)	CRDL	6 months
Hexavalent Chromium	(1)	7 μg/L	48 hours	(2)	4 mg/kg	48 hours
TAL Metals	ILM03.0	CRDL	6 months 26 days (Hg)(3)	ILM03.0	CRDL	6 months 26 days (Hg)(3)
TCL VOAs	3/90 CLP SOW	CRDL	10 days(3)	3/90 CLP SOW	CRDL	10 days
TCL BNAs	3/90 CLP SOW	CRDL	5 days; 40 days(4)	3/90 CLP SOW	CRDL	10 days; 40 days(4)
TCL Pesticides/ PCBs	3/90 CLP SOW	CRDL	5 days; 40 days(4)	3/90 CLP SOW	CRDL	10 days; 40 days(4)
pH	SOP SF-1.1(5)	ASAP	NA	SW-846 9045	NA	ASAP
TPH	NA	NA	NA	EPA Method 418.1	(6)	28 days
Temperature	SOP SF-1.1	-	-	NA	NA	NA
Eh	SOP SF-1.1	-	-	NA	NA	NA
Specific Conductance	SOP SF-1.1	-	-	NA	NA	NA

1 Hexavalent Chromium - Analytical method - NJDEPE modified SW-846 7196A (3rd Edition).

2 Hexavalent Chromium - Preparation method - NJDEPE modified SW-846 3060 (2nd edition). Analytical method - NJDEPE modified SW 846 7196A (3rd Edition).

3 Holding time from Verified Time of Sample Receipt.

4 Days to extraction; days to analysis.

5 SOP SF-1.1 - Standard Operating Procedure SF-1.1 (Volume III, Appendix A).

6 TPH (Total Petroleum Hydrocarbons) - Detection limit as determined by laboratory.

TABLE 2-5

SUMMARY OF SAMPLING AND ANALYSIS PROGRAM
STUDY AREA 5 (NJDEP SITES 079,090, 117, 153, AND 184)
ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Anal tical Pa amete	Num e of Samples[1]					
	079	090	117	153	184	Total
SOIL FILL DEBRIS INVESTIGATION						
Total Chromium	78	102	0	150	71	401
Hexavalent chromium	78	102	0	150	71	401
TCL Organics	8	11	0	12	7	38
TAL Metals	8	11	0	12	7	38
Total Petroleum Hydrocarbons	8	11	0	12	7	38
GROUDNWATER INVESTINGTION[2]						
Total Chromium	4	4	16	7	8	39
Hexavalent Chromium	4	4	16	7	8	39
Temperature	4	4	15	7	6	37
pH	4	4	15	7	6	37
Specific Conductance	4	4	15	7	6	37

1 Number of samples includes duplicates.
2 Sample counts include both filtered and unfiltered groundwater samples.

TABLE 4-1

EXCEEDANCES OF CALCULATED ALTERNATIVE REMEDIATION STANDARDS (ARS)
FOR HEXAVALENT CHROMIUM
STUDY AREA 5
ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Site	Sample Location	Pa amete	Result (m)	Re ulato Limit[1] (m)
Baldwin Steel	090-SB-B02-0002	HEXAVALENT CHROMIUM	644	614 [2]
	090-SB-B02-0204	HEXAVALENT CHROMIUM	834	614 [2]
	090-SB-B02-0406	HEXAVALENT CHROMIUM	6300	614 [2]
	090-SB-B02-0406-D	HEXAVALENT CHROMIUM	6360	614 [2]
	090-SB-B02-1012	HEXAVALENT CHROMIUM	1050	614 [2]
	090-SB-B04-0204	HEXAVALENT CHROMIUM	7390	614 [2]
	090-SB-B08-0002	HEXAVALENT CHROMIUM	739	614 [2]
	090-SB-B08-1214	HEXAVALENT CHROMIUM	2660	614 [2]
	090-SB-C03-1012	HEXAVALENT CHROMIUM	3870	614 [2]
	090-SB-E01-0406	HEXAVALENT CHROMIUM	6250	614 [2]
	090-SB-E01-0810	HEXAVALENT CHROMIUM	8210	614 [2]
	090-SB-E01-1012	HEXAVALENT CHROMIUM	5020	614 [2]
	090-SB-E01-1214	HEXAVALENT CHROMIUM	694	614 [2]
Former Morris Canal	153-SB-A01-0406	HEXAVALENT CHROMIUM	7490	3748 [2]
	153-SB-A01-0608	HEXAVALENT CHROMIUM	7690	3748 [2]
	153-SB-A04-0406	HEXAVALENT CHROMIUM	7680	3748 [2]
	153-SB-A05-0204	HEXAVALENT CHROMIUM	4520	3748 [2]
	153-SB-A05-0406	HEXAVALENT CHROMIUM	8250	3748 [2]
	153-SB-A05-0608	HEXAVALENT CHROMIUM	9150	3748 [2]
	153-SB-A05-0810	HEXAVALENT CHROMIUM	7020	3748 [2]
	153-SB-A06-0608	HEXAVALENT CHROMIUM	4110	3748 [2]
	153-SB-A07-0608	HEXAVALENT CHROMIUM	7750	3748 [2]
	153-SB-A08-0002	HEXAVALENT CHROMIUM	13100	3441[3]
	153-SB-A08-0204	HEXAVALENT CHROMIUM	4750	3748 [2]
	153-SB-A08-0608	HEXAVALENT CHROMIUM	9070	3748 [2]
	153-SB-A08-0608-D	HEXAVALENT CHROMIUM	8970	3748 [2]
	153-SB-A08-0810	HEXAVALENT CHROMIUM	5380	3748 [2]
	153-SB-A11-0204	HEXAVALENT CHROMIUM	10900	3748 [2]
M.I. Holdings	184-SB-A02-0608	HEXAVALENT CHROMIUM	4830	3269 [2]
	184-SB-A02-0810	HEXAVALENT CHROMIUM	5310	3269 [2]
	184-SB-A03-0406	HEXAVALENT CHROMIUM	8080	3269 [2]
	184-SB-A05-0204	HEXAVALENT CHROMIUM	5350	3269 [2]

1 Calculated site-specific ARS value.
2 Site-specific value calculated for Allergic Contact Dermatitis (ACD) via dermal pathway.
3 Site-specific inhalation Alternative Remediation Standrad (ARS).

TABLE 4-2

EXCEEDANCES OF PROPOSED NEW JERSEY NON-RESIDENTIAL SOIL INGESTION GUIDANCE VALUE FOR NON-CHROMIUM COMPOUNDS
STUDY AREA 5
ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Site	Sample Location	Pa amete	Result (m)	Gui ance Value(1) (m)
Route 440 Vehicle Corporation	079-SB-A02-0406	ARSENIC	41.8	20
	079-SB-A02-0406	MERCURY	483	270
Baldwin Steel	090-SB-B02-0204	ARSENIC	42	20
	090-SB-C03-1012	ARSENIC	39	20
Former Morris Canal	153-SB-A09-0810	ARSENIC	250	20
	153-SB-A09-0810	MERCURY	299	270
	153-SB-A09-0810	THALLIUM	2.1	2
	153-SB-A09-0810	BENZO(A)PYRENE	1.5	0.66
	153-SB-A12-0608	ARSENIC	47.9	20
	153-SB-A12-0608	BENZO(A)ANTHRACENE	300	4
	153-SB-A12-0608	BENZO(A)PYRENE	290	0.66
	153-SB-A12-0608	BENZO(B)FLUORANTHENE	340	4
	153-SB-A12-0608	BENZO(K)FLUORANTHENE	120	4
	153-SB-A12-0608	CHRYSENE	300	40
	153-SB-A12-0608	DIBENZO(A,H)ANTHRACENE	39	0.66
	153-SB-A12-0608	INDENO(1,2,3-CD)PYRENE	180	4
	153-SB-A16-0810	ARSENIC	331	20
	153-SB-A16-0810	LEAD	710	600
	153-SB-A16-0810	MERCURY	398	270
	153-SB-A16-0810	THALLIUM	2.4	2
	153-SB-A16-0810	BENZO(A)PYRENE	0.95	0.66
M.I. Holdings	184-SB-A02-0406	COPPER	659	600

1 Proposed NJDEP Non-Residential Soil Ingestion Guidance Value.

TABLE 4-3

EXCEEDANCES OF PROPOSED NEW JERSEY IMPACT TO GROUNDWATER SOIL GUIDANCE VALUE
STUDY AREA 5
ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Site	Sample Location	Pa amete	Result (m)	Gui ance Value(1) (m)
Former Morris Canal	153-SB-A03-0810	BENZENE	1.3	1
	153-SB-A12-0608	ACENAPHTHENE	120	100
	153-SB-A12-0608	ANTHRACENE	160	100
	153-SB-A12-0608	BENZO(A)PYRENE	290	100
	153-SB-A12-0608	BENZO(B)FLUORANTHENE	340	50
	153-SB-A12-0608	FLUORANTHENE	770	100
	153-SB-A12-0608	FLUORENE	150	100
	153-SB-A12-0608	NAPHTHALENE	170	100
	153-SB-A12-0608	PYRENE	690	100
M.I. Holdings	184-SB-A02-0406	CHLOROFORM	1.06	1
	184-SB-A02-0406	TETRACHLOROETHENE	1.6	1
	184-SB-A02-0406	TRICHLOROETHENE	27	1
	184-SB-A09-0810	METHYLENE CHLORIDE	1.68	1

1 Proposed NJDEP Impact to Groundwater Soil Guidance Value.

TABLE 4-4

SUMMARY STATISTICS FOR CHROMIUM AND HEXAVALENT CHROMIUM
SURFACE SOIL
STUDY AREA 5
ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Pa amete	Detection[1] F e uenc	Ran e Of Positi e Concent ations (m)	A e a e Concent ation,[2] Positi e Detections Onl (m)	A e a e[2][3] Concent ation, All Data (m)	Location of Ma imum Concent ation
Site 079 - Route 440 Ve icle Co po ation					
Chromium	12/12	22.1 - 1040	170	170	079-SB-B01-0002
Hexavalent Chromium	12/12	3.1 - 72.1	19.2	19.2	079-SB-B01-0002
Site 090 - Bal win Steel					
Chromium	15/15	26.6 - 10100	1740	1740	090-SB-B02-0002
Hexavalent Chromium	14/15	7.6 - 739	187	175	090-SB-B08-0002
Site 153 - Fo me Mo is Canal					
Chromium	26/26	12.1 - 19500	3260	3260	153-SB-A08-0002
Hexavalent Chromium	25/26	5.4 - 13100	746	717	153-SB-A08-0002
Site 184 - M.I. Hol in s					
Chromium	12/12	13.6 - 19800	2700	2700	184-SB-A09-0002
Hexavalent Chromium	10/12	2.7 - 368	104	86.7	184-SB-A09-0002

1 Detection frequency determined by counting field duplicate samples as one sample.
2 Minimum, maximum, and average concentrations determined using the average of field duplicate results.
3 A value of one-half the detection limit is used for non-detect concentrations for the purpose of calculating the average.

TABLE 4-5

SUMMARY STATISTICS FOR CHROMIUM AND HEXAVALENT CHROMIUM
SUBSURFACE SOIL
STUDY AREA 5
ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Parameter	Detection Frequency[1]	Range Of Positive Concentrations (mg/kg)	Average Concentration,[2] Positive Detections Only (mg/kg)	Average Concentration,[2][3] All Data (mg/kg)	Location of Maximum Concentration
Site 079 - Route 440 Vehicle Corporation					
Chromium	62/62	1.6 - 13100	472	472	079-SB-B01-0406
Hexavalent Chromium	27/62	2.3 - 601	63.5	28.6	079-SB-B01-0406
Site 090 - Baldwin Steel					
Chromium	82/82	1.9 - 36800	2660	2660	090-SB-B08-1214
Hexavalent Chromium	61/82	2.6 - 8210	731	545	090-SB-E01-0810
Site 153 - Former Morris Canal					
Chromium	116/116	2.8 - 48300	6740	6740	153-SB-A07-1214
Hexavalent Chromium	80/116	2.6 - 10900	1530	1060	153-SB-A11-0204
Site 184 - M.I. Holdings					
Chromium	56/56	3.5 - 35000	5850	5850	184-SB-A03-0406
Hexavalent Chromium	26/56	2.6 - 8080	1480	686	184-SB-A03-0406

1 Detection frequency determined by counting field duplicate samples as one sample.
2 Minimum, maximum, and average concentrations determined using the average of field duplicate results.
3 A value of one-half the detection limit is used for non-detect concentrations for the purpose of calculating the average.

TABLE 4-6

SUMMARY OF STATISTICS FOR INORGANIC AND ORGANIC DATA - SURFACE SOIL
SITE 079 - ROUTE 440 VEHICLE CORPORATION
STUDY AREA 5 - ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY
PAGE 1 OF 2

Pa amete	Detection[1] F e uenc	Ran e Of Positi e Concent ations (m)	A e a e Concent ation,[2] Positi e Detections Onl (m)	A e a e[2][3] Concent ation, All Data (m)	Location of Ma imum Concent ation
VOLATILES (m)					
Ethylbenzene	1/1	0.035	0.035	0.035	079-SB-C08-0002
Methylene Chloride	1/1	0.15	0.15	0.15	079-SB-C08-0002
Tetrachloroethene	1/1	0.031	0.031	0.031	079-SB-C08-0002
SEMIVOLATILES (m)					
2-Methylnaphthalene	1/1	0.019	0.019	0.019	079-SB-C08-0002
Acenaphthene	1/1	0.062	0.062	0.062	079-SB-C08-0002
Acenaphthylene	1/1	0.028	0.028	0.028	079-SB-C08-0002
Anthracene	1/1	0.14	0.14	0.14	079-SB-C08-0002
Benzo(a)anthracene	1/1	0.4	0.4	0.4	079-SB-C08-0002
Benzo(a)pyrene	1/1	0.33	0.33	0.33	079-SB-C08-0002
Benzo(b)fluoranthene	1/1	0.55	0.55	0.55	079-SB-C08-0002
Benzo(g,h,i)perylene	1/1	0.079	0.079	0.079	079-SB-C08-0002
Benzo(k)fluoranthene	1/1	0.19	0.19	0.19	079-SB-C08-0002
Bis(2-Ethylhexyl)phthalate	1/1	0.04	0.04	0.04	079-SB-C08-0002
Carbazole	1/1	0.086	0.086	0.086	079-SB-C08-0002
Chrysene	1/1	0.42	0.42	0.42	079-SB-C08-0002
Dibenzo(a,h)anthracene	1/1	0.036	0.036	0.036	079-SB-C08-0002
Dibenzofuran	1/1	0.041	0.041	0.041	079-SB-C08-0002
Fluoranthene	1/1	0.73	0.73	0.73	079-SB-C08-0002
Fluorene	1/1	0.067	0.067	0.067	079-SB-C08-0002
Indeno(1,2,3-cd)pyrene	1/1	0.1	0.1	0.1	079-SB-C08-0002
Naphthalene	1/1	0.02	0.02	0.02	079-SB-C08-0002
Phenanthrene	1/1	0.72	0.72	0.72	079-SB-C08-0002
Pyrene	1/1	0.86	0.86	0.86	079-SB-C08-0002
PESTICIDES PCBs (m)					
4,4'-DDD	1/1	0.0052	0.0052	0.0052	079-SB-C08-0002
4,4'-DDT	1/1	0.0067	0.0067	0.0067	079-SB-C08-0002
Alpha-Chlordane	1/1	0.0024	0.0024	0.0024	079-SB-C08-0002

TABLE 4-6

SUMMARY OF STATISTICS FOR INORGANIC AND ORGANIC DATA - SURFACE SOIL
SITE 079 - ROUTE 440 VEHICLE CORPORATION
STUDY AREA 5 - ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Pa amete	Detection[1] F e uenc	Ran e Of Positi e Concent ations (m)	A e a e Concent ation,[2] Positi e Detections Onl (m)	A e a e[2][3] Concent ation, All Data (m)	Location of Ma imum Concent ation
Endrin Ketone	1/1	0.0079	0.0079	0.0079	079-SB-C08-0002
Gamma-Chlordane	1/1	0.0034	0.0034	0.0034	079-SB-C08-0002
INORGANICS (m)					
Aluminum	1/1	6760	6760	6760	079-SB-C08-0002
Arsenic	1/1	5.7	5.7	5.7	079-SB-C08-0002
Barium	1/1	132	132	132	079-SB-C08-0002
Beryllium	1/1	0.47	0.47	0.47	079-SB-C08-0002
Cadmium	1/1	0.29	0.29	0.29	079-SB-C08-0002
Calcium	1/1	3990	3990	3990	079-SB-C08-0002
Cobalt	1/1	6.9	6.9	6.9	079-SB-C08-0002
Copper	1/1	171	171	171	079-SB-C08-0002
Iron	1/1	12300	12300	12300	079-SB-C08-0002
Lead	1/1	221	221	221	079-SB-C08-0002
Magnesium	1/1	1910	1910	1910	079-SB-C08-0002
Manganese	1/1	318	318	318	079-SB-C08-0002
Mercury	1/1	0.37	0.37	0.37	079-SB-C08-0002
Nickel	1/1	16.4	16.4	16.4	079-SB-C08-0002
Potassium	1/1	517	517	517	079-SB-C08-0002
Silver	1/1	0.33	0.33	0.33	079-SB-C08-0002
Sodium	1/1	134	134	134	079-SB-C08-0002
Vanadium	1/1	22.1	22.1	22.1	079-SB-C08-0002
Zinc	1/1	501	501	501	079-SB-C08-0002
PETROLEUM HYDROCARBONS (m)					
Total Petroleum Hydrocarbons	1/1	816	816	816	079-SB-C08-0002

1 Detection frequency determined by counting field duplicate samples as one sample.
2 Minimum, maximum, and average concentrations determined using the average of field duplicate results.
3 A value of one-half the detection limit is used for non-detect concentrations for the purpose of calculating the average.

TABLE 4-7

SUMMARY STATISTICS FOR ORGANIC AND INORGANIC DATA - SUBSURFACE SOIL
SITE 079 - ROUTE 440 VEHICLE CORPORATION
STUDY AREA 5
ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY
PAGE 1 OF 2

Pa amete	Detection[1] F e uenc	Ran e Of Positi e Concent ations (m)	A e a e Concent ation,[2] Positi e Detections Onl (m)	A e a e[2][3] Concent ation, All Data (m)	Location of Ma imum Concent ation
VOLATILES (m)					
Methylene Chloride	4/7	0.1 - 0.31	0.19	0.52	079-SB-A04-1416
Trichloroethene	1/7	0.058	0.058	0.76	079-SB-D06-1012
SEMIVOLATILES (m)					
2-Methylnaphthalene	1/6	0.031	0.031	0.17	079-SB-A02-0406
4-Methylphenol	1/6	0.025	0.025	0.17	079-SB-A02-0406
Acenaphthene	1/6	0.052	0.052	0.18	079-SB-A02-0406
Acenaphthylene	1/6	0.047	0.047	0.18	079-SB-A02-0406
Anthracene	1/6	0.096	0.096	0.18	079-SB-A02-0406
Benzo(a)anthracene	2/6	0.006 - 0.27	0.14	0.18	079-SB-A02-0406
Benzo(a)pyrene	1/6	0.22	0.22	0.20	079-SB-A02-0406
Benzo(b)fluoranthene	2/6	0.004 - 0.33	0.17	0.19	079-SB-A02-0406
Benzo(g,h,i)perylene	1/6	0.16	0.16	0.19	079-SB-A02-0406
Benzo(k)fluoranthene	1/6	0.12	0.12	0.19	079-SB-A02-0406
Bis(2-Ethylhexyl)phthalate	3/6	0.048 - 0.085	0.067	0.20	079-SB-D05-1012
Carbazole	1/6	0.014	0.014	0.17	079-SB-A02-0406
Chrysene	2/6	0.004 - 0.22	0.11	0.17	079-SB-A02-0406
Dibenzo(a,h)anthracene	1/6	0.043	0.043	0.17	079-SB-A02-0406
Dibenzofuran	1/6	0.028	0.028	0.17	079-SB-A02-0406
Fluoranthene	2/6	0.01 - 0.5	0.25	0.22	079-SB-A02-0406
Fluorene	1/6	0.045	0.045	0.18	079-SB-A02-0406
Indeno(1,2,3-cd)pyrene	1/6	0.14	0.14	0.19	079-SB-A02-0406
Naphthalene	1/6	0.093	0.093	0.18	079-SB-A02-0406
Phenanthrene	2/6	0.011 - 0.17	0.09	0.17	079-SB-A02-0406
Pyrene	2/6	0.008 - 0.56	0.28	0.23	079-SB-A02-0406
INORGANICS (m)					
Aluminum	7/7	3500 - 7420	5320	5320	079-SB-B02-0204
Antimony	1/7	2.8	2.8	0.663571	079-SB-A02-0406
Arsenic	7/7	0.89 - 41.8	8.5	8.5	079-SB-A02-0406
Barium	7/7	14.2 - 723	163	163	079-SB-A02-0406
Beryllium	7/7	0.17 - 0.75	0.34	0.34	079-SB-B02-0204
Cadmium	1/7	0.55	0.55	0.11	079-SB-A02-0406

TABLE 4-7

SUMMARY STATISTICS FOR ORGANIC AND INORGANIC DATA - SUBSURFACE SOIL
SITE 079 - ROUTE 440 VEHICLE CORPORATION
STUDY AREA 5
ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Pa amete	Detection[1] F e uenc	Ran e Of Positi e Concent ations (m)	A e a e Concent ation,[2] Positi e Detections Onl (m)	A e a e[2][3] Concent ation, All Data (m)	Location of Ma imum Concent ation
Calcium	7/7	478 - 18800	4260	4260	079-SB-B02-0204
Cobalt	7/7	2.1 - 8.2	3.9	3.9	079-SB-B02-0204
Copper	7/7	2.1 - 81.3	27.0	27.0	079-SB-A02-0406
Iron	7/7	6800 - 17000	11500	11500	079-SB-A02-0406
Lead	7/7	4.3 - 177	31.8	31.8	079-SB-A02-0406
Magnesium	7/7	590 - 5650	2040	2040	079-SB-B02-0204
Manganese	7/7	75.8 - 480	165	165	079-SB-B02-0204
Mercury	1/7	483	483	69.0	079-SB-A02-0406
Nickel	7/7	3.1 - 27.9	11.9	11.9	079-SB-A02-0406
Potassium	7/7	141 - 1850	635	635	079-SB-B02-0204
Selenium	1/7	1.7	1.7	0.599286	079-SB-A02-0406
Silver	1/7	0.75	0.75	0.215714	079-SB-A02-0406
Sodium	7/7	78.2 - 408	219	219	079-SB-A02-0406
Thallium	2/7	0.96 - 1.5	1.2	0.66	079-SB-A02-0406
Vanadium	7/7	10.4 - 20.2	14.5	14.5	079-SB-A02-0406
Zinc	7/7	12.4 - 378	90.2	90.2	079-SB-A02-0406
PETROLEUM HYDROCARBONS (m)					
Total Petroleum Hydrocarbons	7/7	39.1 - 417	112	112	079-SB-A02-0406

1 Detection frequency determined by counting field duplicate samples as one sample.
2 Minimum, maximum, and average concentrations determined using the average of field duplicate results.
3 A value of one-half the detection limit is used for non-detect concentrations for the purpose of calculating the average.

TABLE 4-8

SUMMARY STATISTICS FOR ORGANICS AND INORGANICS - SURFACE SOIL
SITE 090 - BALDWIN STEEL
STUDY AREA 5 - ALLIEDSIGNAL
JERSEY CITY. NEW JERSEY
PAGE 1 OF 2

Pa amete	Detection[1] F e uenc	Ran e Of Positi e Concent ations (m)	A e a e Concent ation,[2] Positi e Detections Onl (m)	A e a e[2][3] Concent ation, All Data (m)	Location of Ma imum Concent ation
VOLATILES (m)					
Methylene Chloride	2/2	0.24 - 0.42	0.33	0.33	090-SB-F14-0002-D
Toluene	1/2	0.13	0.13	0.42	090-SB-F14-0002-D
Xylenes, Total	1/2	0.32	0.32	0.51	090-SB-F14-0002-D
SEMIVOLATILES (m)					
2-Methylnaphthalene	2/2	0.067 - 0.42	0.24	0.24	090-SB-D14-0002
4-Methylphenol	1/2	0.007	0.007	0.1	090-SB-F14-0002-D
Acenaphthene	2/2	0.007 - 0.01	0.0085	0.0085	090-SB-F14-0002-D
Acenaphthylene	2/2	0.048 - 0.059	0.054	0.054	090-SB-D14-0002
Anthracene	2/2	0.053 - 0.11	0.082	0.082	090-SB-F14-0002-D
Benzo(a)anthracene	2/2	0.15 - 0.16	0.16	0.16	090-SB-F14-0002-D
Benzo(a)pyrene	2/2	0.14 - 0.16	0.15	0.15	090-SB-D14-0002
Benzo(b)fluoranthene	2/2	0.35	0.35	0.35	090-SB-D14-0002
Benzo(b)fluoranthene	2/2	0.35	0.35	0.35	090-SB-F14-0002-D
Benzo(g,h,i)perylene	2/2	0.059 - 0.067	0.063	0.063	090-SB-D14-0002
Benzo(k)fluoranthene	2/2	0.097 - 0.12	0.11	0.11	090-SB-F14-0002-D
Bis(2-Ethylhexyl)phthalate	2/2	0.045 - 0.074	0.06	0.06	090-SB-F14-0002-D
Carbazole	2/2	0.02 - 0.076	0.048	0.048	090-SB-F14-0002-D
Chrysene	2/2	0.2 - 0.33	0.27	0.27	090-SB-D14-0002
Dibenzo(a,h)anthracene	2/2	0.023 - 0.026	0.025	0.025	090-SB-D14-0002
Dibenzofuran	2/2	0.038 - 0.1	0.069	0.069	090-SB-D14-0002
Fluoranthene	2/2	0.22 - 0.29	0.26	0.26	090-SB-F14-0002-D
Fluorene	1/2	0.014	0.014	0.1	090-SB-F14-0002-D
Indeno(1,2,3-cd)pyrene	2/2	0.063 - 0.072	0.068	0.068	090-SB-D14-0002
Naphthalene	2/2	0.06 - 0.33	0.20	0.20	090-SB-D14-0002
Phenanthrene	2/2	0.27 - 0.41	0.34	0.34	090-SB-D14-0002
Pyrene	2/2	0.26 - 0.32	0.29	0.29	090-SB-F14-0002-D
PESTICIDES PCBs (m)					
4,4'-DDT	1/2	0.0044	0.0044	0.003	090-SB-F14-0002-D
Endrin Ketone	2/2	0.0037 - 0.0054	0.0046	0.0046	090-SB-D14-0002

TABLE 4-8

SUMMARY STATISTICS FOR ORGANICS AND INORGANICS - SURFACE SOIL
SITE 090 - BALDWIN STEEL
STUDY AREA 5 - ALLIEDSIGNAL
JERSEY CITY. NEW JERSEY

Pa amete	Detection[1] F e uenc	Ran e Of Positi e Concent ations (m)	A e a e Concent ation,[2] Positi e Detections Onl (m)	A e a e[2][3] Concent ation, All Data (m)	Location of Ma imum Concent ation
Methoxychlor	1/2	0.019	0.019	0.014	090-SB-F14-0002
INORGANICS (m)					
Aluminum	2/2	1210 - 2800	2005	2005	090-SB-F14-0002-D
Antimony	2/2	0.74 - 3	1.87	1.87	090-SB-D14-0002
Arsenic	2/2	4.7 - 8.9	6.8	6.8	090-SB-D14-0002
Barium	2/2	29.7 - 35.2	32.5	32.5	090-SB-F14-0002-D
Beryllium	2/2	0.18 - 0.2	0.19	0.19	090-SB-F14-0002-D
Calcium	2/2	1800 - 23300	12550	12550	090-SB-D14-0002
Cobalt	2/2	3 - 3.2	3.1	3.1	090-SB-D14-0002
Copper	2/2	40.5 - 65.1	52.8	52.8	090-SB-D14-0002
Iron	2/2	9350 - 12500	10900	10900	090-SB-D14-0002
Lead	2/2	78.3 - 97.1	87.7	87.7	090-SB-D14-0002
Magnesium	2/2	588 - 12400	6490	6490	090-SB-D14-0002
Manganese	2/2	133 - 134	134	134	090-SB-F14-0002-D
Mercury	2/2	1.8 - 2.3	2.05	2.05	090-SB-F14-0002-D
Nickel	2/2	9.4 - 11.4	10.4	10.4	090-SB-D14-0002
Potassium	2/2	114 - 144	129	129	090-SB-F14-0002-D
Selenium	1/2	0.89	0.89	0.62	090-SB-D14-0002
Sodium	2/2	77.1 - 79.2	78.2	78.2	090-SB-D14-0002
Vanadium	2/2	6.8 - 11.2	9	9	090-SB-F14-0002-D
Zinc	2/2	40.2 - 56.4	48.3	48.3	090-SB-D14-0002
PETROLEUM HYDROCARBONS (m)					
Total Petroleum Hydrocarbons	2/2	332 - 889	611	611	090-SB-F14-0002-D

1 Detection frequency determined by counting field duplicate samples as one sample.
2 Minimum, maximum, and average concentrations determined using the average of field duplicate results.
3 A value of one-half the detection limit is used for non-detect concentrations for the purpose of calculating the average.

TABLE 4-9

SUMMARY STATISTICS FOR ORGANIC AND INORGANIC DATA - SUBSURFACE SOIL
SITE 090 - BALDWIN STEEL
STUDY AREA 5 - ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY
PAGE 1 OF 2

Pa amete	Detection[1] F e uenc	Ran e Of Positi e Concent ations (m)	A e a e Concent ation,[2] Positi e Detections Onl (m)	A e a e[2][3] Concent ation, All Data (m)	Location of Ma imum Concent ation
VOLATILES (m)					
Methylene Chloride	5/8	0.096 - 0.27	0.16	0.47	090-SB-F10-1214
SEMIVOLATILES (m)					
2-Methylnaphthalene	1/8	0.032	0.032	0.68	090-SB-B02-0204
Acenaphthylene	1/8	0.032	0.032	0.69	090-SB-E03-0810
Anthracene	2/8	0.039 - 0.12	0.08	0.32	090-SB-C03-1012
Benzo(a)anthracene	4/8	0.007 - 0.38	0.17	0.33	090-SB-C03-1012
Benzo(a)pyrene	4/8	0.004 - 0.25	0.11	0.30	090-SB-C03-1012
Benzo(b)fluoranthene	4/8	0.013 - 0.39	0.21	0.34	090-SB-C03-1012
Benzo(g,h,i)perylene	4/8	0.006 - 0.16	0.07	0.28	090-SB-C03-1012
Benzo(k)fluoranthene	4/8	0.004 - 0.15	0.066	0.27	090-SB-C03-1012
Bis(2-Ethylhexyl)phthalate	4/8	0.046 - 0.098	0.075	0.64	090-SB-B08-1214
Carbazole	4/8	0.007 - 0.069	0.029	0.25	090-SB-C03-1012
Chrysene	4/8	0.008 - 0.51	0.29	0.39	090-SB-B02-0204
Dibenzo(a,h)anthracene	2/8	0.025 - 0.034	0.030	0.66	090-SB-B02-0204
Dibenzofuran	1/8	0.043	0.043	0.69	090-SB-B02-0204
Fluoranthene	5/8	0.012 - 0.87	0.30	0.27	090-SB-C03-1012
Fluorene	1/8	0.009	0.009	0.69	090-SB-E03-0810
Indeno(1,2,3-cd)pyrene	4/8	0.006 - 0.15	0.065	0.27	090-SB-C03-1012
Naphthalene	2/8	0.008 - 0.2	0.10	0.68	090-SB-B02-0204
Phenanthrene	4/8	0.009 - 0.94	0.46	0.47	090-SB-B02-0204
Phenol	1/8	0.2	0.2	0.71	090-SB-B08-1214
Pyrene	5/8	0.009 - 0.78	0.26	0.24	090-SB-C03-1012
INORGANICS (m)					
Aluminum	8/8	3590 - 42500	13400	13400	090-SB-E01-0406
Antimony	1/8	3.7	3.7	0.94	090-SB-C03-1012
Arsenic	6/8	0.89 - 42	14.4	11.1	090-SB-B02-0204
Barium	8/8	11.8 - 124	52	52	090-SB-B08-1214
Beryllium	8/8	0.19 - 0.9	0.41	0.41	090-SB-B02-0204
Calcium	8/8	320 - 228000	72500	72500	090-SB-C03-1012
Cobalt	8/8	1.7 - 181	41.6	41.6	090-SB-E01-0406
Copper	8/8	3.9 - 47.2	18.2	18.2	090-SB-E01-0406

TABLE 4-9

SUMMARY STATISTICS FOR ORGANIC AND INORGANIC DATA - SUBSURFACE SOIL
SITE 090 - BALDWIN STEEL
STUDY AREA 5 - ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Pa amete	Detection[1] F e uenc	Ran e Of Positi e Concent ations (m)	A e a e Concent ation,[2] Positi e Detections Onl (m)	A e a e[2][3] Concent ation, All Data (m)	Location of Ma imum Concent ation
Iron	8/8	4940 - 89500	23600	23600	090-SB-E01-0406
Lead	8/8	2.1 - 88.1	24.1	24.1	090-SB-C03-1012
Magnesium	8/8	506 - 49700	13100	13100	090-SB-E01-0406
Manganese	8/8	26.9 - 1580	355	355	090-SB-E01-0406
Mercury	6/8	0.08 - 6.6	2.2	1.6	090-SB-C03-1012
Nickel	7/8	4.3 - 919	223	195	090-SB-E01-0406
Potassium	8/8	68.8 - 1350	474	474	090-SB-B02-0204
Silver	2/8	0.37 - 0.64	0.51	0.23	090-SB-E01-0406
Sodium	8/8	89 - 1180	490	489	090-SB-E01-0406
Vanadium	8/8	6.4 - 517	111	111	090-SB-E01-0406
Zinc	8/8	14.5 - 351	126	126	090-SB-E01-0406
PETROLEUM HYDROCARBONS (m)					
Total Petroleum Hydrocarbons	3/8	31.1 - 2870	1040	402	090-SB-C03-1012

1 Detection frequency determined by counting field duplicate samples as one sample.
2 Minimum, maximum, and average concentrations determined using the average of field duplicate results.
3 A value of one-half the detection limit is used for non-detect concentrations for the purpose of calculating the average.

TABLE 4-10

SUMMARY STATISTICS FOR ORGANIC AND INORGANIC DATA - SUBSURFACE SOIL
SITE 153 - FORMER MORRIS CANAL
STUDY AREA 5 - ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Pa amete	Detection[1] F e uenc	Ran e Of Positi e Concent ations (m)	A e a e Concent ation,[2] Positi e Detections Onl (m)	A e a e[2][3] Concent ation, All Data (m)	Location of Ma imum Concent ation
VOLATILES (m)					
Benzene	1/12	1.3	1.3	1.2	153-SB-A03-0810
Carbon Disulfide	1/12	0.15	0.15	1.2	153-SB-A19-0810
Methylene Chloride	4/12	0.099 - 0.24	0.15	0.85	153-SB-A12-0608
Toluene	1/12	0.21	0.21	1.2	153-SB-A19-0810
SEMIVOLATILES (m)					
2,4-Dimethylphenol	1/11	0.032	0.032	7.3	153-SB-A03-0810
2,6-Dinitrotoluene	1/11	0.008	0.008	7.3	153-SB-A13-0810
2-Methylnaphthalene	6/11	0.008 - 87	14.6	8.3	153-SB-A12-0608
2-Methylphenol	1/11	0.039	0.039	7.3	153-SB-A03-0810
4,6-Dinitro-2-methylphenol	1/11	0.014	0.014	17.8	153-MW-A13T-1517
4-Methylphenol	5/11	0.01 - 0.27	0.13	6.7	153-SB-A09-0810
Acenaphthene	5/11	0.015 - 120	24.1	11.2	153-SB-A12-0608
Acenaphthylene	3/11	0.28 - 11	3.9	1.4	153-SB-A12-0608
Anthracene	6/11	0.004 - 160	26.9	14.9	153-SB-A12-0608
Benzo(a)anthracene	5/11	0.007 - 300	60.7	27.9	153-SB-A12-0608
Benzo(a)pyrene	6/11	0.005 - 290	48.8	26.9	153-SB-A12-0608
Benzo(b)fluoranthene	6/11	0.009 - 340	57.4	31.6	153-SB-A12-0608
Benzo(g,h,i)perylene	5/11	0.022 - 180	36.3	16.8	153-SB-A12-0608
Benzo(k)fluoranthene	4/11	0.01 - 120	30.4	11.4	153-SB-A12-0608
Bis(2-Ethylhexyl)phthalate	5/11	0.057 - 0.14	0.10	7.3	153-MW-A13T-1517
Carbazole	4/11	0.029 - 100	25.1	9.5	153-SB-A12-0608
Chrysene	5/11	0.006 - 300	60.7	27.9	153-SB-A12-0608
Dibenzo(a,h)anthracene	2/11	0.18 - 39	19.6	4.4	153-SB-A12-0608
Dibenzofuran	6/11	0.005 - 100	16.8	9.4	153-SB-A12-0608
Fluoranthene	6/11	0.013 - 770	129	70.9	153-SB-A12-0608
Fluorene	5/11	0.005 - 150	30.1	14	153-SB-A12-0608
Indeno(1,2,3-cd)pyrene	5/11	0.013 - 180	36.3	16.8	153-SB-A12-0608
Naphthalene	8/11	0.01 - 170	21.4	15.6	153-SB-A12-0608
Pentachlorophenol	1/11	0.016	0.016	17.8	153-MW-A13T-1517
Phenanthrene	6/11	0.018 - 960	160	87.8	153-SB-A12-0608
Phenol	1/11	0.035	0.035	7.3	153-SB-A13-0810
Pyrene	7/11	0.006 - 690	99.5	63.6	153-SB-A12-0608

TABLE 4-10

SUMMARY STATISTICS FOR ORGANIC AND INORGANIC DATA - SUBSURFACE SOIL
SITE 153 - FORMER MORRIS CANAL
STUDY AREA 5 - ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Pa amete	Detection[1] F e uenc	Ran e Of Positi e Concent ations (m)	A e a e Concent ation,[2] Positi e Detections Onl (m)	A e a e[2][3] Concent ation, All Data (m)	Location of Ma imum Concent ation
PESTICIDES PCBs (m)					
Endosulfan II	1/12	0.028	0.028	0.0050	153-SB-A12-0608
Endrin Ketone	1/12	0.016	0.016	0.0040	153-SB-A09-0810
Methoxychlor	1/12	1	1	0.097	153-SB-A12-0608
INORGANICS (m)					
Aluminum	12/12	2350 - 34200	10700	10700	153-SB-A07-0608
Antimony	6/12	1.8 - 13.2	6.8	3.7	153-SB-A09-0810
Arsenic	10/12	0.69 - 331	65.8	54.9	153-SB-A16-0810
Barium	12/12	7.9 - 3200	574	574	153-SB-A16-0810
Beryllium	12/12	0.08 - 0.8	0.38	0.38	153-SB-A03-0810
Cadmium	4/12	0.27 - 4	1.8	0.64	153-SB-A09-0810
Calcium	12/12	352 - 378000	77500	77500	153-SB-A08-0810
Cobalt	12/12	1.3 - 147	34.8	34.8	153-SB-A07-0608
Copper	12/12	2.4 - 360	92.2	92.2	153-SB-A12-0608
Iron	12/12	1530 - 73800	27300	27300	153-SB-A07-0608
Lead	12/12	2.8 - 710	142	142	153-SB-A16-0810
Magnesium	12/12	356 - 43400	12000	12000	153-SB-A07-0608
Manganese	12/12	21.6 - 1290	428	428	153-SB-A07-0608
Mercury	6/12	0.38 - 398	155	77.7	153-SB-A16-0810
Nickel	12/12	4.5 - 742	171	171	153-SB-A07-0608
Potassium	12/12	50.6 - 2440	604	604	153-SB-A09-0810
Selenium	3/12	1 - 5.9	2.7	1.3	153-SB-A16-0810
Silver	3/12	0.42 - 2.4	1.7	0.58	153-SB-A09-0810
Sodium	11/12	86.1 - 3360	730	672	153-SB-A09-0810
Thallium	3/12	1.1 - 2.4	1.9	0.99	153-SB-A16-0810
Vanadium	11/12	3.6 - 599	155.7	143	153-SB-A12-0608
Zinc	12/12	9.2 - 1230	303	303	153-SB-A16-0810
PETROLEUM HYDROCARBONS (m)					
Total Petroleum Hydrocarbons	6/12	30.1 - 1750	475	249	153-SB-A09-0810

1 Detection frequency determined by counting field duplicate samples as one sample.
2 Minimum, maximum, and average concentrations determined using the average of field duplicate results.
3 A value of one-half the detection limit is used for non-detect concentrations for the purpose of calculating the average.

TABLE 4-11

SUMMARY STATISTICS FOR ORGANIC AND INORGANIC DATA - SUBSURFACE SOIL
SITE 184 - M.I. HOLDINGS
STUDY AREA 5 - ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Pa amete	Detection[1] F e uenc	Ran e Of Positi e Concent ations (m)	A e a e Concent ation,[2] Positi e Detections Onl (m)	A e a e[2][3] Concent ation, All Data (m)	Location of Ma imum Concent ation
VOLATILES (m)					
1,2-Dichloroethene (total)	2/7	0.0657 - 2.02	1.04	1.18	184-SB-A02-0406
Acetone	5/7	0.63 - 1.38	0.87	1.13	184-SB-A07-0608
Benzene	1/7	0.156	0.16	0.94	184-SB-A07-0608
Chloroform	1/7	1.06	1.06	1.13	184-SB-A02-0406
Ethylbenzene	2/7	0.0832 - 0.0921	0.088	0.90	184-SB-E10-1214
Methylene Chloride	7/7	0.147 - 1.68	0.51	0.51	184-SB-A09-0810
Tetrachloroethene	1/7	1.6	1.6	1.21	184-SB-A02-0406
Trichloroethene	2/7	0.213 - 27	13.6	4.69	184-SB-A02-0406
SEMIVOLATILES (m)					
1,2-Dichlorobenzene	1/7	0.005	0.005	0.72	184-SB-A03-1012
1,4-Dichlorobenzene	1/7	0.007	0.007	0.72	184-SB-A02-0406
2,4-Dichlorophenol	1/7	0.013	0.013	0.72	184-SB-A02-0406
2-Methylnaphthalene	3/7	0.007 - 0.063	0.026	0.65	184-SB-A02-0406
4-Methylphenol	1/7	0.17	0.17	0.73	184-SB-A07-0608
Acenaphthene	2/7	0.01 - 0.021	0.016	0.69	184-SB-A05-0204
Acenaphthylene	1/7	0.051	0.051	0.73	184-SB-A02-0406
Anthracene	3/7	0.022 - 0.054	0.038	0.65	184-SB-A02-0406
Benzo(a)anthracene	4/7	0.008 - 0.38	0.13	0.68	184-SB-A02-0406
Benzo(a)pyrene	3/7	0.043 - 0.38	0.16	0.71	184-SB-A02-0406
Benzo(b)fluoranthene	3/7	0.058 - 0.67	0.27	0.75	184-SB-A02-0406
Benzo(g,h,i)perylene	3/7	0.026 - 0.2	0.085	0.67	184-SB-A02-0406
Benzo(k)fluoranthene	3/7	0.026 - 0.25	0.10	0.68	184-SB-A02-0406
Carbazole	2/7	0.013 - 0.017	0.015	0.69	184-SB-A02-0406
Chrysene	4/7	0.004 - 0.51	0.15	0.70	184-SB-A02-0406
Dibenzo(a,h)anthracene	2/7	0.03 - 0.077	0.054	0.69	184-SB-A02-0406
Dibenzofuran	3/7	0.01 - 0.022	0.017	0.64	184-SB-A02-0406
Fluoranthene	4/7	0.006 - 0.58	0.20	0.73	184-SB-A02-0406
Fluorene	2/7	0.023 - 0.027	0.025	0.68	184-SB-A05-0204
Indeno(1,2,3-cd)pyrene	3/7	0.021 - 0.22	0.091	0.68	184-SB-A02-0406
Naphthalene	2/7	0.013 - 0.016	0.015	0.67	184-SB-A07-0608
Nitrobenzene	1/7	0.064	0.064	0.73	184-SB-A02-0406

TABLE 4-11

SUMMARY STATISTICS FOR ORGANIC AND INORGANIC DATA - SUBSURFACE SOIL
SITE 184 - M.I. HOLDINGS
STUDY AREA 5 - ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Pa amete	Detection[1] F e uenc	Ran e Of Positi e Concent ations (m)	A e a e Concent ation,[2] Positi e Detections Onl (m)	A e a e[2][3] Concent ation, All Data (m)	Location of Ma imum Concent ation
Phenanthrene	3/7	0.057 - 0.21	0.14	0.70	184-SB-A02-0406
Phenol	1/7	0.014	0.014	0.72	184-SB-A05-0204
Pyrene	4/7	0.004 - 0.49	0.18	0.71	184-SB-A02-0406
PESTICIDES PCBs (m)					
Endrin	1/7	0.0048	0.0048	0.0034	184-SB-A02-0406
INORGANICS (m)					
Aluminum	7/7	3010 - 30200	11500	11500	184-SB-A05-0204
Antimony	2/7	7.5 - 24.7	16.1	5.4	184-SB-A05-0204
Arsenic	4/7	1.1 - 15.2	7.5	4.8	184-SB-A07-0608
Barium	7/7	4.4 - 509	133	133	184-SB-A05-0204
Beryllium	4/7	0.13 - 0.85	0.36	0.26	184-SB-A07-0608
Cadmium	1/7	0.36	0.36	0.20	184-SB-A02-0406
Calcium	7/7	205 - 162000	37200	37200	184-SB-A05-0204
Cobalt	6/7	1.1 - 126	34.0	29.2	184-SB-A05-0204
Copper	6/7	1.4 - 659	124	106	184-SB-A02-0406
Iron	7/7	3600 - 81200	24300	24300	184-SB-A05-0204
Lead	7/7	2.2 - 309	69.0	69.0	184-SB-A02-0406
Magnesium	7/7	608 - 34300	9020	9020.0	184-SB-A05-0204
Manganese	7/7	29.5 - 1070	352	352	184-SB-A05-0204
Mercury	7/7	0.08 - 204	47.9	47.9	184-SB-A06-1012
Nickel	7/7	2.4 - 620	142	142	184-SB-A05-0204
Potassium	7/7	125 - 2840	752	752	184-SB-A07-0608
Sodium	6/7	143 - 2420	919	797	184-SB-A09-0810
Thallium	1/7	1	1	1.15	184-SB-A03-1012
Vanadium	7/7	6.3 - 414	95.4	95.4	184-SB-A05-0204
Zinc	7/7	5.7 - 737	171	171	184-SB-A02-0406
PETROLEUM HYDROCARBONS (m)					
Total Petroleum Hydrocarbons	3/7	26.5 - 408	165	77.9	184-SB-A09-0810

1 Detection frequency determined by counting field duplicate samples as one sample.
2 Minimum, maximum, and average concentrations determined using the average of field duplicate results.
3 A value of one-half the detection limit is used for non-detect concentrations for the purpose of calculating the average.

TABLE 4-12

EXCEEDANCES OF NEW JERSEY GROUNDWATER UALITY CRITERIA
STUDY AREA 5
ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Site	Sample Location	Pa amete	Result (u L)	Re ulato Limit(1) (u L)
Ryerson Steel	117-MW-A5	CHROMIUM	164	100
	117-MW-A5-F	CHROMIUM	166	100
	117-MW-A14	CHROMIUM	133	100
	117-MW-A14-F	CHROMIUM	142	100
	117-MW-A62	CHROMIUM	1810	100
	117-MW-A62-02	CHROMIUM	108	100
	117-MW-A85	CHROMIUM	8970	100
	117-MW-A85-02	CHROMIUM	14100	100
	117-MW-A85-02-F	CHROMIUM	8720	100
	117-MW-A85-03	ALUMINUM	311000	200
	117-MW-A85-03	CHROMIUM	119000	100
	117-MW-A85-03	IRON	212000	300
	117-MW-A85-03	SODIUM	994000	50000
	117-MW-A85-03	AMMONIA	47400	500
	117-MW-A85-03	TOTAL DISSOLVED SOLIDS	7190000	500000
	117-MW-A85-03-F	ALUMINUM	91600	200
	117-MW-A85-03-F	CHROMIUM	29000	100
	117-MW-A85-03-F	IRON	64500	300
	117-MW-A85-03-F	SODIUM	917000	50000
	117-MW-A85-F	CHROMIUM	1130	100
	117-MW-A89	CHROMIUM	1870	100
	117-MW-A89-02	ALUMINUM	233	200
	117-MW-A89-02	CHROMIUM	122	100
	117-MW-A89-02	SODIUM	137000	50000
	117-MW-A89-02	AMMONIA	12100	500
	117-MW-A89-03	IRON	2090	300
	117-MW-A89-03	SODIUM	217000	50000
	117-MW-A89-03	AMMONIA	13600	500
	117-MW-A89-03	TOTAL DISSOLVED SOLIDS	1120000	500000
	117-MW-A89-03-D	IRON	2000	300
	117-MW-A89-03-D	SODIUM	220000	50000
	117-MW-A89-03-D	AMMONIA	11800	500
	117-MW-A89-03-D	TOTAL DISSOLVED SOLIDS	1190000	500000
	117-MW-A89-03-F	IRON	2710	300
	117-MW-A89-03-F	SODIUM	232000	50000
	117-MW-A89-03-F	CHLORIDE	500000	250000
	117-MW-A89-03-F-D	IRON	2970	300
	117-MW-A89-03-F-D	SODIUM	233000	50000
	117-MW-A89-03-F-D	CHLORIDE	490000	250000
	117-MW-A89-F	CHROMIUM	1790	100
	117-MW-A99	CHROMIUM	504	100
	117-MW-A99-02	CHROMIUM	130	100
	117-MW-A99-03	CHROMIUM	215	100
	117-MW-A99-03	IRON	2440	300
	117-MW-A99-03	SODIUM	333000	50000
	117-MW-A99-03	TOTAL DISSOLVED SOLIDS	1270000	500000
	117-MW-A99-03-F	IRON	2080	300
	117-MW-A99-03-F	SODIUM	387000	50000
	117-MW-A99-03-F	CHLORIDE	570000	250000

TABLE 4-12

EXCEEDANCES OF NEW JERSEY GROUNDWATER UALITY CRITERIA
STUDY AREA 5
ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Site	Sample Location	Pa amete	Result (u L)	Re ulato Limit(1) (u L)
Former Morris Canal	153-MW-A13-01	CHROMIUM	1830	100
	153-MW-A13-01-F	CHROMIUM	207	100
	153-MW-A13-02	CHROMIUM	459	100
	153-MW-A13T-01	ALUMINUM	279	200
	153-MW-A15-01	IRON	16700	300
	153-MW-A15-01	SODIUM	145000	50000
	153-MW-A15-01	AMMONIA	920	500
	153-MW-A15-01	TOTAL DISSOLVED SOLIDS	1000000	500000
	153-MW-A15-01-F	IRON	17900	300
	153-MW-A15-01-F	SODIUM	158000	50000
	153-MW-A15-01-F	SULFATE	263000	250000
	153-MW-A15-02	IRON	18400	300
	153-MW-A15-02	SODIUM	324000	50000
	153-MW-A15-02	AMMONIA	900	500
	153-MW-A15-02	TOTAL DISSOLVED SOLIDS	1840000	500000
	153-MW-A15-02-F	IRON	17700	300
	153-MW-A15-02-F	SODIUM	322000	50000
	153-MW-A15-02-F	CHLORIDE	580000	250000
M.I. Holdings	184-MW-C02-03	IRON	18500	300
	184-MW-C02-03	SODIUM	110000	50000
	184-MW-C02-03	AMMONIA	8800	500
	184-MW-C02-03	TOTAL DISSOLVED SOLIDS	630000	500000
	184-MW-C02-03-F	IRON	17900	300
	184-MW-C02-03-F	SODIUM	108000	50000
	184-MW-C10-03	SODIUM	188000	50000
	184-MW-C10-03	TOTAL DISSOLVED SOLIDS	872000	500000
	184-MW-C10-03-D	SODIUM	190000	50000
	184-MW-C10-03-D	TOTAL DISSOLVED SOLIDS	854000	500000
	184-MW-C10-03-F	SODIUM	191000	50000
	184-MW-C10-03-F	CHLORIDE	320000	250000
	184-MW-C10-03-F-D	SODIUM	188000	50000
	184-MW-C10-03-F-D	CHLORIDE	325000	250000
	184-MW-E10-03	IRON	536	300
	184-MW-E10-03-F	IRON	850	300

1 NJDEP Groundwater Quality Criteria.

TABLE 4- 13

SUMMARY STATISTICS FOR CHROMIUM AND HEXAVALENT CHROMIUM - GROUNDWATER
STUDY AREA 5
ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Pa amete	Detection[1] F e uenc	Ran e Of Positi e Concent ations (u L)	A e a e Concent ation,[2] Positi e Detections Onl (u L)	A e a e[2][3] Concent ation, All Data (u L)	Location of Ma imum Concent ation
Site 079 - Route 440 Ve icle Co po ation					
Chromium	4/4	6.6 - 17	9.4	9.4	079-MW-A2
Hexavalent Chromium	NOT DETECTED				
Chromium, Filtered	3/4	2 - 6.8	4.7	4.1	079-MW-A2-02-F
Hexavalent Chromium, Filtered	NOT DETECTED				
Site 090 - Bal win Steel					
Chromium	4/4	6.6 - 17	9.4	9.4	079-MW-A2
Hexavalent Chromium	NOT DETECTED				
Chromium, Filtered	3/4	2 - 6.8	4.7	4.1	079-MW-A2-02-F
Hexavalent Chromium, Filtered	NOT DETECTED				
Site 153 - Fo me Mo is Canal					
Chromium	5/7	5.5 - 1830	468	335	153-MW-A13-01
Hexavalent Chromium	2/7	22.2 - 1330	676	197	153-MW-A13-01
Chromium, Filtered	4/7	11.8 - 207	64.6	37.6	153-MW-A13-01-F
Hexavalent Chromium, Filtered	1/7	571	571	85.9	153-MW-A13-01-F
Site 184 - M.I. Hol in s					
Chromium	4/6	4.1 - 76.1	26.5	18.1	184-MW-C02-02-D
Hexavalent Chromium	NOT DETECTED				
Chromium, Filtered	3/6	4.4 - 7.2	5.5	3.3	184-MW-C02-02-F-D
Hexavalent Chromium, Filtered	NOT DETECTED				
Site 117 - R e son Steel					
Chromium	15/15	31.7 - 119000	9820	9820	117-MW-A85-03
Hexavalent Chromium	6/15	11.6 - 1750	360	147	117-MW-A89
Chromium, Filtered	14/15	3 - 29000	2940	2746	117-MW-A85-03-F
Hexavalent Chromium, Filtered	5/15	29.9 - 1720	423	145	117-MW-A89-F

1 Detection frequency determined by counting field duplicate samples as one sample.
2 Minimum, maximum, and average concentrations determined using the average of field duplicate results.
3 A value of one-half the detection limit is used for non-detect concentrations for the purpose of calculating the average.

TABLE 4-14

SUMMARY STATISTICS FOR ORGANIC AND INORGANIC DATA - GROUNDWATER
SITE 090 - BALDWIN STEEL
STUDY AREA 5 - ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Pa amete	Detection[1] F e uenc	Ran e Of Positi e Concent ations	A e a e Concent ation,[2] Positi e Detections Onl	A e a e[2][3] Concent ation, All Data	Location of Ma imum Concent ation
INORGANICS (u L)					
Calcium	1/1	79500	79500	79500	090-MW-F14-02
Iron	1/1	251	251	251	090-MW-F14-02
Magnesium	1/1	22800	22800	22800	090-MW-F14-02
Potassium	1/1	3710	3710	3710	090-MW-F14-02
Sodium	1/1	28600	28600	28600	090-MW-F14-02
MISCELLANEOUS PARAMETERS (m L)					
Alkalinity	1/1	111	111	111	090-MW-F14-02
Ammonia	1/1	0.2	0.2	0.2	090-MW-F14-02
Bicarbonate Alkalinity	1/1	111	111	111	090-MW-F14-02
Chloride	1/1	27.5	27.5	27.5	090-MW-F14-02
Silica	1/1	23	23	23	090-MW-F14-02
Sulfate	1/1	204	204	204	090-MW-F14-02

1 Detection frequency determined by counting field duplicate samples as one sample.
2 Minimum, maximum, and average concentrations determined using the average of field duplicate results.
3 A value of one-half the detection limit is used for non-detect concentrations for the purpose of calculating the average.

TABLE 4-15

SUMMARY STATISTICS FOR ORGANIC AND INORGANIC DATA - GROUNDWATER
SITE 153 - FORMER MORRIS CANAL
STUDY AREA 5 - ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Pa amete	Detection[1] F e uenc	Ran e Of Positi e Concent ations	A e a e Concent ation,[2] Positi e Detections Onl	A e a e[2][3] Concent ation, All Data	Location of Ma imum Concent ation
INORGANICS (u L)					
Aluminum	3/3	35.6 - 279	120	120	153-MW-A13T-01
Calcium	3/3	26000 - 211000	127000	127000	153-MW-A15-02
Iron	3/3	205 - 18400	11800	11800	153-MW-A15-02
Magnesium	3/3	3560 - 42100	24200	24200	153-MW-A15-02
Potassium	3/3	2890 - 20300	11700	11700	153-MW-A15-02
Sodium	3/3	14000 - 324000	161000	161000	153-MW-A15-02
DISSOLVED INORGANICS (u L)					
Aluminum, Filtered	3/3	32.1 - 59.4	47.1	47.1	153-MW-A15-01-F
Calcium, Filtered	3/3	22400 - 203000	126800	126800	153-MW-A15-02-F
Iron, Filtered	2/3	17700 - 17900	17800	11900	153-MW-A15-01-F
Magnesium, Filtered	3/3	3270 - 41500	24600	24600	153-MW-A15-02-F
Potassium, Filtered	3/3	6280 - 20000	13300	13300	153-MW-A15-02-F
MISCELLANEOUS PARAMETERS (m L)					
Alkalinity	4/4	42.2 - 361	175	175	153-MW-A15-02-F
Ammonia	3/4	0.13 - 0.92	0.65	0.5	153-MW-A15-01
Bicarbonate Alkalinity	4/4	42.2 - 361	174	174	153-MW-A15-02-F
Carbonate Alkalinity	1/4	6	6	3.4	153-MW-A13T-01-F
Chloride	4/4	11.5 - 580	200	200	153-MW-A15-02-F
Nitrate	2/4	5 - 5.4	5.2	2.6	153-MW-A13T-02-F
Nitrite	1/4	0.36	0.36	0.13	153-MW-A13T-01-F
Silica	4/4	12 - 30	20.3	20.3	153-MW-A15-02
Sodium, Filtered	3/3	20200 - 322000	167000	167000	153-MW-A15-02-F
Specific Gravity	4/4	0.998 - 1.002	1.0	1.0	153-MW-A15-02
Sulfate	4/4	15.9 - 263	123	123	153-MW-A15-01-F
Total Dissolved Solids	4/4	146 - 1840	785	785	153-MW-A15-02
Total Organic Carbon	6/8	1.1 - 8.8	5.1	4.0	153-MW-A15-01
Total Organic Carbon	6/8	1.1 - 8.8	5.1	4.0	153-MW-A15-01-F

1 Detection frequency determined by counting field duplicate samples as one sample.
2 Minimum, maximum, and average concentrations determined using the average of field duplicate results.
3 A value of one-half the detection limit is used for non-detect concentrations for the purpose of calculating the average.

TABLE 4-16

SUMMARY STATISTICS FOR ORGANIC AND INORGANIC DATA - GROUNDWATER
SITE 184 - M.I. HOLDINGS
STUDY AREA 5 - ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Pa amete	Detection[1] F e uenc	Ran e Of Positi e Concent ations	A e a e Concent ation,[2] Positi e Detections Onl	A e a e[2][3] Concent ation, All Data	Location of Ma imum Concent ation
INORGANICS (u L)					
Aluminum	2/3	93.6 - 184	139	97.4	184-MW-C10-03-D
Calcium	3/3	75400 - 105000	89700	89700	184-MW-C02-03
Iron	3/3	231 - 18500	6420	6420	184-MW-C02-03
Magnesium	3/3	8550 - 10100	9510	9510	184-MW-C10-03-D
Potassium	3/3	4580 - 13500	9930	9930	184-MW-C02-03
Sodium	3/3	36000 - 190000	112000	112000	184-MW-C10-03-D
DISSOLVED INORGANICS (u L)					
Aluminum, Filtered	1/3	37.4	37.4	22.2	184-MW-C02-03-F
Calcium, Filtered	3/3	76200 - 106000	90600	90600	184-MW-C02-03-F
Iron, Filtered	2/3	850 - 17900	9380	6250	184-MW-C02-03-F
Magnesium, Filtered	3/3	8560 - 10300	9550	9550	184-MW-C10-03-F-D
Potassium, Filtered	3/3	4590 - 13600	10130	10130	184-MW-C10-03-F-D
Sodium, Filtered	3/3	37600 - 191000	112000	112000	184-MW-C10-03-F-D
MISCELLANEOUS PARAMETERS (m L)					
Alkalinity	3/3	76.8 - 453	219	219	184-MW-C02-03-F
Ammonia	1/3	8.8	8.8	2.97	184-MW-C02-03
Bicarbonate Alkalinity	3/3	76.8 - 453	219	219	184-MW-C02-03-F
Chloride	3/3	57 - 325	151	151	184-MW-C10-03-F-D
Nitrate	2/3	4.1 - 5.3	4.7	3.15	184-MW-C10-03-F-D
Nitrite	1/3	0.11	0.11	0.07	184-MW-C10-03-F-D
Sulfate	2/3	68.2 - 114	91.1	61.6	184-MW-E10-03-F
Total Dissolved Solids	3/3	402 - 872	635	635	184-MW-C10-03-D
Total Organic Carbon	6/6	2 - 10.9	5.1	5.1	184-MW-C02-03

1 Detection frequency determined by counting field duplicate samples as one sample.
2 Minimum, maximum, and average concentrations determined using the average of field duplicate results.
3 A value of one-half the detection limit is used for non-detect concentrations for the purpose of calculating the average.

TABLE 4-17

SUMMARY STATISTICS FOR ORGANIC AND INORGANIC DATA - GROUNDWATER
SITE 117 - RYERSON STEEL
STUDY AREA 5 - ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Pa amete	Detection[1] F e uenc	Ran e Of Positi e Concent ations	A e a e Concent ation,[2] Positi e Detections Onl	A e a e[2][3] Concent ation, All Data	Location of Ma imum Concent ation
VOLATILES (u L)					
1,2-Dichloroethene (total)	1/4	0.8	0.8	3.95	117-MW-A14-02
2-Butanone	1/4	19	19	8.5	117-MW-A85-02
Acetone	2/4	17 - 190	103	54.3	117-MW-A85-02
Carbon Disulfide	1/4	1	1	4	117-MW-A85-02
Methylene Chloride	2/4	0.6 - 1	0.8	2.9	117-MW-A5-02
Toluene	1/4	1	1	4	117-MW-A85-02
INORGANICS (u L)					
Aluminum	7/8	29.6 - 311000	57600	50400	117-MW-A85-03
Calcium	5/5	33300 - 1520000	350000	350000	117-MW-A85-03
Iron	4/5	157 - 212000	54200	43300	117-MW-A85-03
Magnesium	5/5	2280 - 25700	9500	9500	117-MW-A99-03
Potassium	5/5	1540 - 38500	26300	26300	117-MW-A85-03
Sodium	5/5	23300 - 994000	341000	341000	117-MW-A85-03
DISSOLVED INORGANICS (u L)					
Calcium, Filtered	3/3	56600 - 172000	107000	107000	117-MW-A85-03-F
Magnesium, Filtered	3/3	2100 - 28400	11400	11400	117-MW-A99-03-F
Iron, Filtered	4/5	105 - 64500	17400	13900	117-MW-A85-03-F
Potassium, Filtered	3/3	27600 - 38200	33200	33200	117-MW-A89-03-F-D
Sodium, Filtered	3/3	233000 - 917000	512000	512000	117-MW-A85-03-F
MISCELLANEOUS PARAMETERS (m L)					
Alkalinity	5/5	76.5 - 1860	501	501	117-MW-A85-03-F
Ammonia	4/5	0.2 - 47.4	18.3	14.7	117-MW-A85-03
Bicarbonate Alkalinity	5/5	76.5 - 420	208	208	117-MW-A85-03-F
Carbonate Alkalinity	2/5	24.5 - 1440	732	294	117-MW-A85-03-F
Chloride	4/5	36 - 570	317	254	117-MW-A99-03-F
Nitrate	1/3	0.56	0.56	0.22	117-MW-A89-03-F-D
Nitrite	2/3	0.26 - 0.88	0.57	0.4	117-MW-A85-03-F
Silica	2/3	11 - 13	12	8.17	117-MW-A5-02
Specific Gravity	1/1	1.001	1.001	1.001	117-MW-A85-03

TABLE 4-17

SUMMARY STATISTICS FOR ORGANIC AND INORGANIC DATA - GROUNDWATER
SITE 117 - RYERSON STEEL
STUDY AREA 5 - ALLIEDSIGNAL
JERSEY CITY, NEW JERSEY

Pa amete	Detection[1] F e uenc	Ran e Of Positi e Concent ations	A e a e Concent ation,[2] Positi e Detections Onl	A e a e[2][3] Concent ation, All Data	Location of Ma imum Concent ation
Sulfate	3/5	64.2 - 82.2	74.2	45.5	117-MW-A89-03-F-D
Total Dissolved Solids	3/3	1190 - 7190	3220	3220	117-MW-A85-03
Total Organic Carbon	6/6	6.6 - 2310	527	527	117-MW-A85-03

1 Detection frequency determined by counting field duplicate samples as one sample.
2 Minimum, maximum, and average concentrations determined using the average of field duplicate results.
3 A value of one-half the detection limit is used for non-detect concentrations for the purpose of calculating the average.

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project / Site: ALLIEDSIGNAL-HUDSON CO.
Project No.: 1A73

Sample ID No.: 153MWA13 01
Sample Location: MORRIS CANAL
Sampled By: SJC

[X] Monitoring Well Screen ± 4' TO 14'
[ ] Domestic Well
[ ] Other:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 1-6-99 / Time: 0935	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU		DO mg/L	Salinity %	
Method: PERISTALTIC	CLEAR	9.52	-69	13.6	2	10	1.69	.02	

PURGE DATA HORIBA LAMOTTE

Date: 1-6-99 / Method: PERISTALTIC	Time	pH	S.C.	Temp.	Turbidity		DO	Salinity	Pump Rate mL/MIN	W.L.
	0840	--	—	—	—	—	—	—	—	6.13
Monitor Reading (ppm):	0850	6.65	.73	12.3	26	8	2.38	0.03	.20	6.95
Well Casing Diameter: 2" / SCREEN LENGTH 6'	0900	8.45	.69	13.2	5	9	1.67	0.02	.22	7.55
Well Casing Material: PVC	0910	9.58	.69	13.3	6	11	2.09	0.02	.17	7.95
Total Well Depth (TD): 9.65	0920	9.65	.69	13.5	3	16	1.06	0.03	.16	8.50
Static Water Level (WL): 6.13	0930	9.52	.69	13.6	2	10	1.69	0.02	.17	8.95
One Casing Volume(gal/L): 2.5±										
Start Purge (hrs): 0840										
End Purge (hrs): 0930										
Total Purge Time (min): 50										
Total Vol. Purged (gal/L): 9.2										

VOL.
2.0
4.2
5.9
1.6
7.5
1.7
9.2

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements		Collected
TOTAL CHROMIUM	HNO_3 4°C	500 ML PE		✓
DISSOLVED CHROMIUM	HNO_3 4°C	500 ML PE	FILTERED	✓
HEXAVALENT CHROMIUM (total)	4°C	500 ML PE		✓
DISSOLVED HEXAVALENT Cr.	4°C	500 ML PE	FILTERED	✓
3.52' WATER	*RATE ABOUT THE PUMP	AS SLOW AS I CAN ADJUST		

OBSERVATIONS / NOTES

STABILIZATION PARAMETERS:
TEMP : ± 1°C
pH : ± 0.2 UNITS
S.C. : ± 5%

INTAKE HOSE (TUBING) NEAR BOTTOM OF WELL. DUE TO SMALL WATER COLUMN
OR 3 vol. (max.)

LAB INFO

LAB: ENVIROTECH
COC #:

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): SJConti

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Page___ of ___

Project / Site: ALLIEDSIGNAL-HUDSON CO.
Project No.: 1A73

Sample ID No.: 153MWA1302
Sample Location: MORRIS CANAL
Sampled By: SJC

[X] Monitoring Well
[ ] Domestic Well
[ ] Other:

Type of Sample:
[X] Low Concentration DO
[ ] High Concentration [ ] W/KIT

SAMPLING DATA

Date: 7/20/99	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	SAL %	TDS g/l	ORP mV
Time: 1115									
Method: PERISTALTIC									

PURGE DATA / GROUNDWATER PARAMETERS

Date: 7/20/99	Time	pH	S.C.	Temp.	Turbidity		DO	SAL	TDS	Pump Rate mL/MIN	W.L
Method: PERISTALTIC	0813										6.83
Monitor Reading (ppm):	0823	9.2	0.88	22.0	17	4	6.4?	0	.56	-193	-.18	7.68
Well Casing Diameter: 2" SCREEN LENGTH	0833	10.4	0.88	21.8	9	3	4.0	0	.56	-239	.18	8.30
Well Casing Material: PVC	0843	10.2	0.87	21.6	7	3	3.5	0	.56	-238	.17	8.89
Total Well Depth (TD): 9.65'	0853	10.0	0.91	21.2	7	4	3.8	0	.58	-230	.17	9.40
Static Water Level (WL): 6.83											
One Casing Volume(gal/L):											
Start Purge (hrs): 0813	WELL IS PUMPING DRY - WILL SAMPLE										
End Purge (hrs): 0853	LATER. ONLY SAMPLED - ITEMS BELOW										
Total Purge Time (min): 40											
Total Vol. Purged (gal/L): 7.0											

VOL.
1.8
3.6
1.7
5.3
1.7
7.0

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TOTAL CHROMIUM, ~~Al, Ca, Mg, Na, K, Fe~~	HNO_3, 4°C	1 LPE	✓
• DISSOLVED CHROMIUM, Al, Ca, Mg Na, K, Fe	HNO_3, 4°C	1 L PE FILTERED •	✓
SPECIFIC GRAV.	4°C	500 ML PE	
HEXAVALENT CHROMIUM (total) + TDS	4°C	500 ML PE	✓
• DISSOLVED HEXAVALENT Cr.	4°C	500 ML PE FILTERED •	✓
AMMONIA	4°C H_2SO_4	500 ML PE	
TOC	4°C H_2SO_4	250 ML AMBER	
SILICA	4°C	500 ML PE	
• Diss. Chloride, Sulfate, Bi Carb, Alk	4°C	1 LPE • FILTERED	
NO2, NO3, Carb			
	W/ FIELD KITS	DO — H_2S — CO_2 — Fe^{+2} —	
• TOC (DISS) AMBER (250 ML)	4°C H_2SO_4	NOT ENOUGH VOLUME	

OBSERVATIONS / NOTES | **LAB INFO**

STABILIZATION PARAMETERS:
TEMP: ± 1°C
pH: ± 0.2 Units OR 3 vol. (max.)
S.C.: ± 5%

LAB: ENVIROTECH
COC #: 01750

Check If Collected:
[X] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): SJConti

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project / Site: ALLIEDSIGNAL-HUDSON CO.
Project No.: 1A73

Sample ID No.: 153 MW A15 01
Sample Location: SITE 153
Sampled By: SJC / BB

[X] Monitoring Well
[ ] Domestic Well
[ ] Other:

Type of Sample:
[X] Low Concentration
[ ] High Concentration WITH 2 KIT

SAMPLING DATA

Date: 5/26/99 Time: 1300	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU		DO mg/L	Salinity %	ORP mV	
Method: PERISTALTIC	CLEAR	6.56	1.52	18.6	—	1	2.27	0.07	-22	

PURGE DATA FOR (BAILER / PUMP) PUMP

Date: 5/26/99	Time	pH	S.C.	Temp.	Turbidity		DO	Salinity	Pump Rate ml/min		W.L.
Method: PERISTALTIC	1205			INITIAL							7.82
Monitor Reading (ppm): —	1215	7.23	1.48	18.9	-10	4	2.55	0.06	-63	.27	7.82
Well Casing Diameter: 2" SCREEN LENGTH 10'	1225	6.56	1.30	18.4	—	3	1.85	0.06	-37	.23	7.82
Well Casing Material: PVC	1235	6.56	1.52	18.7	—	3	2.09	0.07	-29	.22	7.82
Total Well Depth (TD): 13' ±	1245	6.56	1.52	19.1	—	3	2.26	0.07	-28	.19	7.82
Static Water Level (WL): 7.82	1255	6.56	1.52	18.6	—	1	2.27	0.07	-22	.21	7.82
One Casing Volume(gal/L): 3.2±											
Start Purge (hrs): 1205											
End Purge (hrs): 1255											
Total Purge Time(min): 50											
Total Vol. Purged (gal/L): 11.2											

VOL.
2.7
5.0
7.2
9.1
11.2

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TOTAL CHROMIUM, Al, Ca, Mg, Na, K, Fe	HNO_3 4°C	1 L PE	✓
• DISSOLVED CHROMIUM, Al, Ca, Mg Na, K, Fe	HNO_3 4°C	1 L PE FILTERED •	✓
SPECIFIC GRAV.	4°C	500 ML PE	✓
HEXAVALENT CHROMIUM (total) + TDS	4°C	500 ML PE	✓
• DISSOLVED HEXAVALENT Cr.	4°C	500 ML PE FILTERED •	✓
AMMONIA	4°C H_2SO_4	500 ML PE	✓
TOC	4°C H_2SO_4	250 ML AMBER	✓
SILICA	4°C	500 ML PE	✓
• DISS. Chloride, Sulfate, Bi Carb, AIK NO_2, NO_3	4°C	1 L PE • FILTERED	✓

	W/ FIELD KITS	DO	H_2S	CO_2	Fe^{+2}	← DISS Fe^{+2}
		2	0	35	6.8	
• TOC (DISS) AMBER (250 ML)	4°C, H_2SO_4	MG/L	MG/L	MG/L	MG/L	✓

OBSERVATIONS / NOTES

STABILIZATION PARAMETERS:
TEMP: ± 1°C
pH : ± 0.2 Units OR 3 vol. (max.)
S.C. : ± 5%

LAB INFO

LAB: ENVIROTECH
COC #: 01744

Check if Collected:
[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): SJ Conte

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Page___ of ___

Project / Site: ALLIEDSIGNAL-HUDSON CO.
Project No.: 1A73

Sample ID No.: 153MWA1502
Sample Location: MORRIS CANAL
Sampled By: SJC

⋈ Monitoring Well
[ ] Domestic Well
[ ] Other:

Type of Sample:
⋈ Low Concentration DO
[ ] High Concentration 3 To 4 W/KIT

SAMPLE COLLECTION

Date: 7/14/99 Time: 1445	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU		DO mg/L	SAL %	TDS g/l	ORP mV	
Method: PERISTALTIC	CLEAR	6.7	3.1	21.1	8	2	4.4	.2	2.0	-75	

PURGE DATA

Date: 7/14/99	Time	pH	S.C.	Temp.	Turbidity		DO	SAL	TDS	Pump Rate ml/min	W.L.
Method: PERISTALTIC	1400	—									8.33
Monitor Reading (ppm): —	1410	6.8	3.2	21.3	38	8	NA	.2	2.1	-79	.23
Well Casing Diameter: 2" SCREEN LENGTH	1420	6.7	3.1	21.3	17	4	3.8	.2	2.0	-80	.17
Well Casing Material: PVC	1430	6.8	3.1	21.4	16	3	4.1	.2	2.0	-82	.17
Total Well Depth (TD): 13±	1440	6.7	3.1	21.1	8	2	4.4	.2	2.0	-75	.20
Static Water Level (WL): 8.33											
One Casing Volume(gal/L): —											
Start Purge (hrs): 1400											
End Purge (hrs): 1440											
Total Purge Time (min): 40											
Total Vol. Purged (gal/L): 7.7											

VOL.
2.3
4.0
5.7
7.7

8.33
8.33
8.33

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TOTAL CHROMIUM, Al, Ca, Mg, Na, K, Fe	HNO_3 4°C	1 L PE	✓
• DISSOLVED CHROMIUM, Al, Ca, Mg Na, K, Fe	HNO_3 4°C	1 L PE FILTERED •	✓
SPECIFIC GRAV.	4°C	500 ML PE	✓
HEXAVALENT CHROMIUM (total) + TDS	4°C	500 ML PE	✓
• DISSOLVED HEXAVALENT Cr.	4°C	500 ML PE FILTERED •	✓
AMMONIA	4°C H_2SO_4	500 ML PE	✓
TOC	4°C H_2SO_4	250 ML AMBER	✓
SILICA	4°C	500 ML PE	✓
• DISS. Chloride, Sulfate, Bi Carb, Alk NO2, NO3, Comb.	4°C	1 L PE • FILTERED	✓
	W/ FIELD KITS	DO: 3→4 mg/L; H_2S: 0 mg/L; CO_2: 35 mg/L; DISS Fe^{+2}: 7.0 mg/L	← DISS
• TOC (DISS) AMBER (250 ML)	4°C, H_2SO_4	mg/L	✓

OBSERVATIONS / NOTES

STABILIZATION PARAMETERS:
TEMP: ± 1°C
pH: ± 0.2 Units OR 3 vol. (max.)
S.C.: ± 5%

LAB INFO

LAB: ENVIROTECH
COC #: 01748

Check if Collected:
☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET** Page___ of ___

Project / Site: ALLIEDSIGNAL-HUDSON CO.
Project No.: 1A73

Sample ID No.: 153MWA13T PS
Sample Location: SITE 153
Sampled By: SJC / BB

[X] Monitoring Well
[ ] Domestic Well
[ ] Other:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 5/18/99 Time:	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU		DO mg/L	Salinity %	ORP mV	
Method: PERISTALTIC	CLEAR	8.23	.232	17.7	-	22	3.37	0.00	—	

PURGE DATA (LOW FLOW SAMPLING METHOD)

Date: 5/18/99	Time	pH	S.C.	Temp.	Turbidity		DO	Salinity	Pump Rate	
Method: PERISTALTIC	1335	—	—	INIT	IAL	—	—	—	—	—
Monitor Reading (ppm):	1345	8.52	.368	17.8	14	79	2.96	0.01		.22
Well Casing Diameter: 2"ϕ SCREEN LENGTH 15'	1355	8.44	.247	17.6	5	60	2.89	0.00		.20
Well Casing Material: PVC	1405	8.35	.239	17.4	-10	45	2.80	0.00		.20
Total Well Depth (TD): 58'(GS)	1415	8.24	.232	17.7	-10	26	2.67	0.00		.20
Static Water Level (WL): 6.34	1425	8.23	.232	17.7	—	22	3.37	0.00		.20
One Casing Volume(gal/L):	1435	—	—	—	—	—	—	—		.20
Start Purge (hrs): 1335										
End Purge (hrs): 1425					↑					
Total Purge Time (min): (50)					?					
Total Vol. Purged (gal/L):										

VOL.	W.L.
2.2	6.34
4.2	8.33
6.2	—
8.2	8.85
10.2	9.02
	9.02

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements		Collected
TOTAL CHROMIUM	HNO_3 4°C	500 ML PE		✓
DISSOLVED CHROMIUM	HNO_3 4°C	500 ML PE	FILTERED	✓
HEXAVALENT CHROMIUM (total)	4°C	500 ML PE		✓
DISSOLVED HEXAVALENT Cr.	4°C	500 ML PE	FILTERED	✓

OBSERVATIONS / NOTES

STABILIZATION PARAMETERS:
TEMP: ± 1°C
pH : ± 0.2 UNITS OR 3 vol. (max.)
S.C. : ± 5%

LAB INFO

LAB: ENVIROTECH
COC #: 01741

Check if Collected:
[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET** Page___ of ___

Project / Site: ALLIEDSIGNAL-HUDSON CO.
Project No.: 1A73

Sample ID No.: 153 MWA13T 01
Sample Location: SITE 153
Sampled By: SJC / BB

[X] Monitoring Well
[ ] Domestic Well
[ ] Other:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

→ 2 → 3 W/KIT.

SAMPLING DATA

Date: 5/26/99 Time: 1450 Method: PERISTALTIC	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU		DO mg/L	Salinity %	ORP mV
	CLEAR	7.87	.227	18.2	—	9	2.46	0.00	47

PURGE DATA FOR (GPM / LAMOTTE)

VOL.	Date: 5/26/99 Method: PERISTALTIC	Time	pH	S.C.	Temp.	Turbidity		DO	Salinity	Pump Rate mL/min	W.L.
2.4		1335	—	—	INITIAL					—	5.93
4.5	Monitor Reading (ppm): —	1345	7.95	.246	19.0	142	64	2.56	0.00	—	.24 8.25
6.5	Well Casing Diameter: 2" SCREEN LENGTH 15' Well Casing Material: PVC	1355	7.84	.231	18.7	-10	59	2.47	0.00	22.2	.21 8.45
8.5	Total Well Depth (TD): 58' ±	1405	7.78	.232	18.9	—	36	2.67	0.00	29.5	.20
10.5	Static Water Level (WL): 5.93	1415	7.79	.227	18.7	—	24	2.40	0.00	40	.20 8.60
12.5	One Casing Volume(gal/L): 32.2±	1425	7.81	.229	18.7	—	18	2.40	0.00	48	.20
14.5	Start Purge (hrs): 1335	1435	7.82	.228	18.4	—	13	2.39	0.00	43	.20 8.71
	End Purge (hrs): 1445	1445	7.87	.227	18.2		9	2.46	0.00	47	.20 8.73
	Total Purge Time (min): 70										
	Total Vol. Purged (gal/L): 14.5										

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TOTAL CHROMIUM, Al, Ca, Mg, Na, K, Fe	HNO_3 4°C	1 LPE	✓
• DISSOLVED CHROMIUM, Al, Ca, Mg Na, K, Fe	HNO_3 4°C	1 L PE FILTERED •	✓
SPECIFIC GRAV.	4°C	500 ML PE	✓
HEXAVALENT CHROMIUM (total) TDS	4°C	500 ML PE	✓
• DISSOLVED HEXAVALENT Cr.	4°C	500 ML PE FILTERED •	✓
AMMONIA	4°C H_2SO_4	500 ML PE	✓
TOC	4°C H_2SO_4	250 ML AMBER	✓
SILICA	4°C	500 ML PE	✓
• DISS. Chloride, Sulfate, Bi Carb, Alk NO2, NO3	4°C	1 LPE • FILTERED	✓
	W/ FIELD KITS	DO: 2→3 MG/L; H_2S: 0 MG/L; CO_2: <10 MG/L; Fe^{+2}: 0 MG/L	DISS Fe^{+2} ✓
• TOC (DISS) AMBER (250 ML)	4°C, H_2SO_4	MG/L	✓

OBSERVATIONS / NOTES

STABILIZATION PARAMETERS:
TEMP: ± 1°C
pH : ± 0.2 UNITS OR 3 Vol. (max.)
S.C. : ± 5%

LAB INFO

LAB: ENVIROTECH
COC #: 01744

Check if Collected:
[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): SJConta

Tetra Tech NUS, Inc. GROUNDWATER SAMPLE LOG SHEET

Project / Site:	ALLIEDSIGNAL-HUDSON CO.	Sample ID No.:	153MWA13T02
Project No.:	1A73	Sample Location:	
		Sampled By:	SJC

[X] Monitoring Well
[ ] Domestic Well
[ ] Other:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

DO 2 To 3 W/KIT

SAMPLING DATA

Date: 7/20/99	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU		DO mg/L	SAL %	TDS g/l	ORP mV
Time: 1030										
Method: PERISTALTIC	CLEAR	8.6	.24	20.7	32	10	4.4	0	.16	-7

PURGE DATA

VOL.	Date: 7/20/99	Time	pH	S.C.	Temp.	Turbidity		DO	SAL	TDS		Pump Rate m/min	W.L
1.9	Method: PERISTALTIC	0908											6.30
3.8	Monitor Reading (ppm):	0918	9.2	.27	20.6	560	110	4.1	0	.18	-159	.19	
5.8	Well Casing Diameter: 2" SCREEN LENGTH	0928	8.6	.25	20.2	220	80	3.8	0	.16	-57	.19	8.72
7.6	Well Casing Material: PVC	0938	8.5	.24	20.3	130	60	3.5	0	.16	-11	.20	8.95
1.9	Total Well Depth (TD): 58'±	0948	8.5	.24	20.5	86	39	3.8	0	.16	-20	.18	—
9.5	Static Water Level (WL): 6.3	0958	8.4	.24	20.6	70	30	4.4	0	.16	-14	.19	—
1.9	One Casing Volume(gal/L):	1008	8.4	.24	20.8	50	21	4.2	0	.16	+2	.18	9.05
11.4	Start Purge (hrs): 0908	1018	8.6	.24	20.5	42	17	4.1	0	.16	+12	.19	9.05
1.9	End Purge (hrs): 1028	1028	8.6	.24	20.7	32	10	4.4	0	.16	-7	.19	
3	Total Purge Time (min): 80												
	Total Vol. Purged (gal/L): 13.3												

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TOTAL CHROMIUM, Al, Ca, Mg, Na, K, Fe	HNO_3 4°C	1 L PE	✓
• DISSOLVED CHROMIUM, Al, Ca, Mg Na, K, Fe	HNO_3 4°C	1 L PE FILTERED •	✓
SPECIFIC GRAV.	4°C	500 ML PE	✓
HEXAVALENT CHROMIUM (total) + TDS	4°C	500 ML PE	✓
• DISSOLVED HEXAVALENT Cr.	4°C	500 ML PE FILTERED •	✓
AMMONIA	4°C H_2SO_4	500 ML PE	✓
TOC	4°C H_2SO_4	250 ML AMBER	✓
SILICA	4°C	500 ML PE	✓
• DISS. Clhoride, Sulfate, Bi Carb, Alk NO2, NO3 Carb	4°C	1 L PE • FILTERED	✓
	W/ FIELD KITS	DO: 2 To 3 mg/L; H2S: 0 mg/L; CO2: <10 mg/L; Fe^{+2}: 0 mg/L	
• TOC (DISS) AMBER (250 ML)	4°C, H_2SO_4		✓

OBSERVATIONS / NOTES

STABILIZATION PARAMETERS:
TEMP: ± 1°C
pH: ± 0.2 Units
S.C.: ± 5%
OR 3 vol. (max.)

LAB INFO

LAB: ENVIROTECH

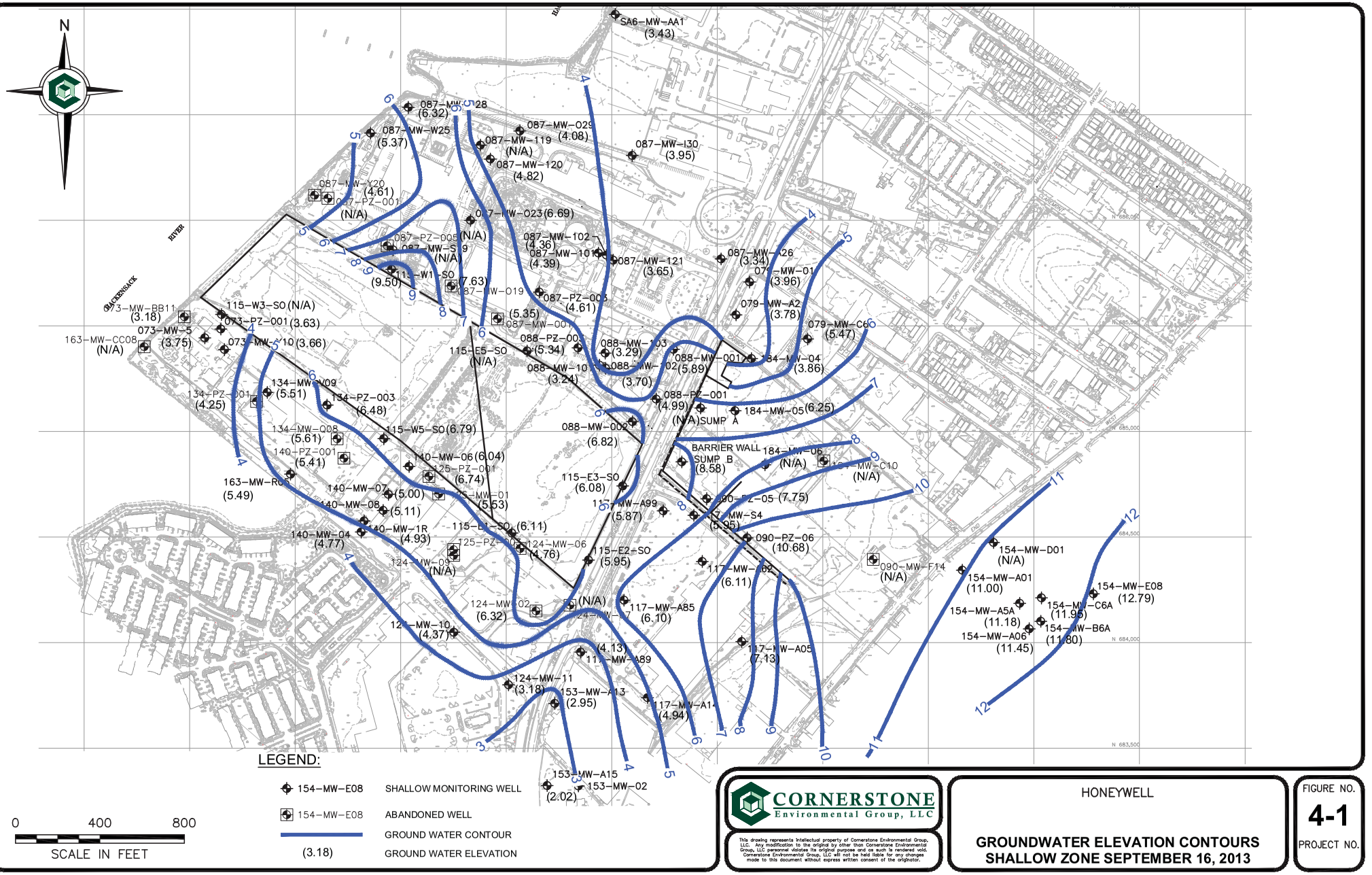
COC #: 01744

Check If Collected:
[X] MS/MSD [ ] DUPLICATE / ID No.:

Signature(s): SJ Conti

APPENDIX C-2

REGIONAL GROUNDWATER CONTOUR MAPS
(Cornerstone, 2013)



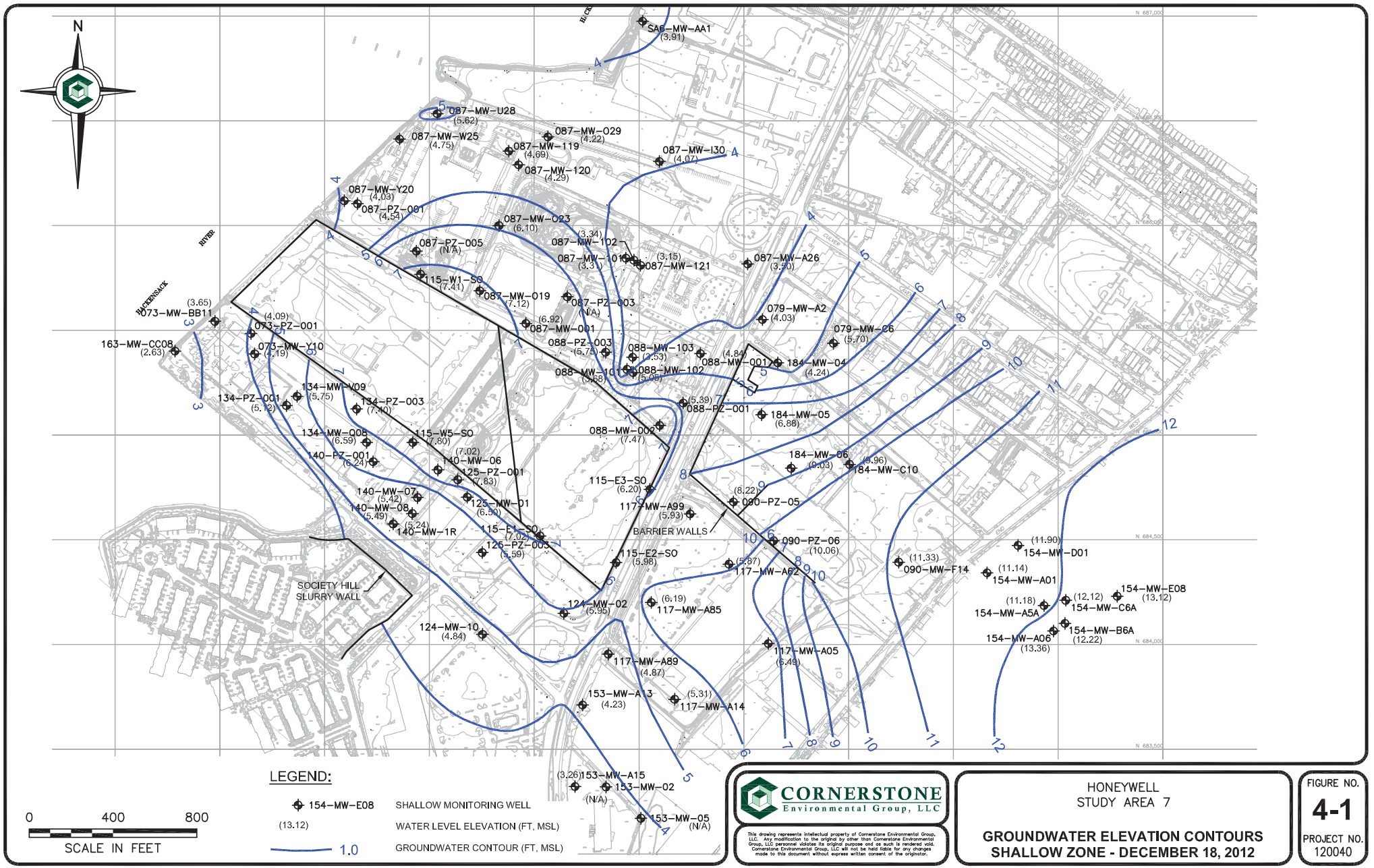
CORNERSTONE Environmental Group, LLC

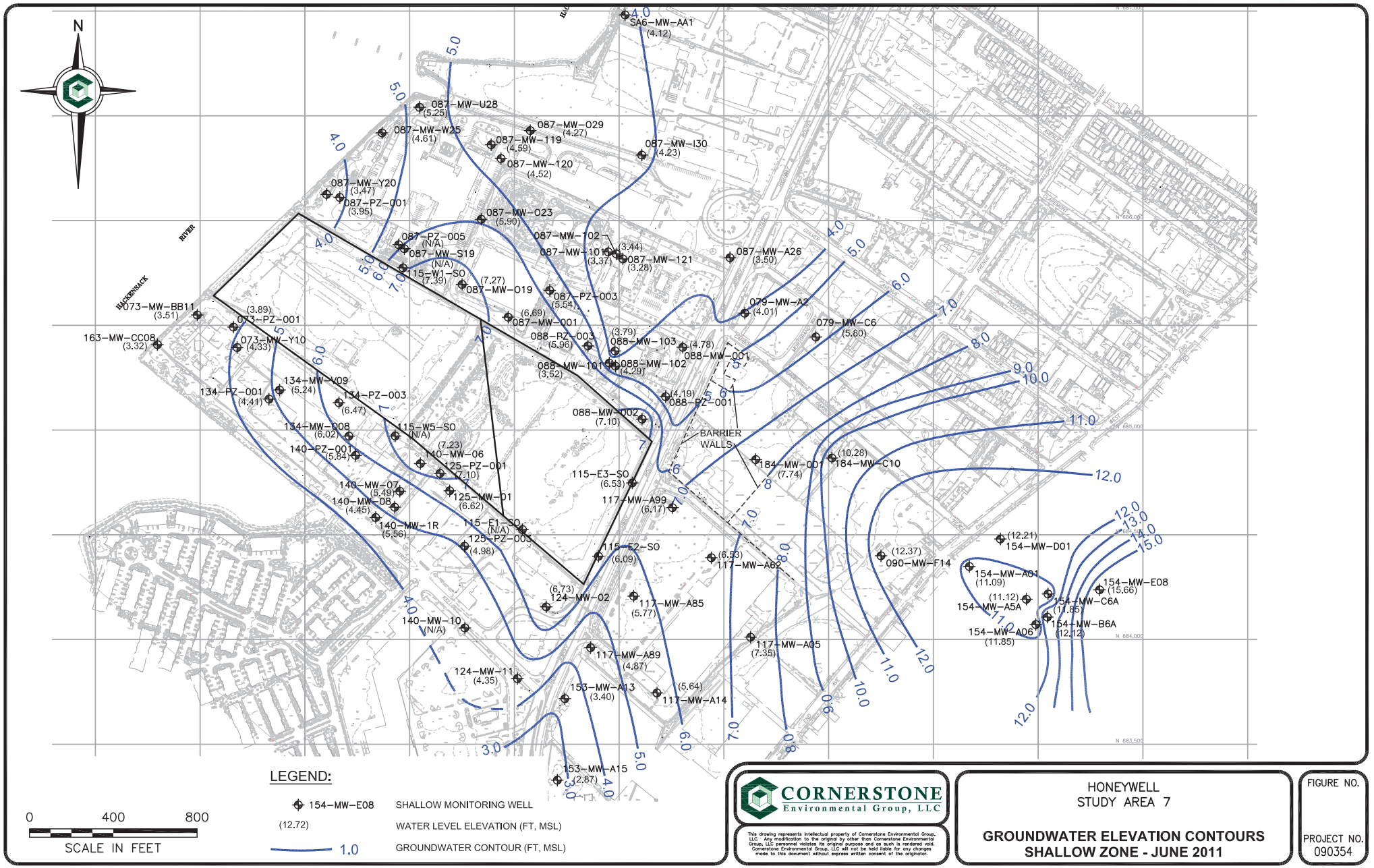
HONEYWELL

GROUNDWATER ELEVATION CONTOURS SHALLOW ZONE SEPTEMBER 16, 2013

FIGURE NO. 4-1

PROJECT NO.


N
SA6-MW-AA1 (3.91)
087-MW-U28 (5.62)
087-MW-W25 (4.75)
087-MW-029 (4.22)
087-MW-119 (4.69)
087-MW-120 (4.29)
087-MW-I30 (4.07)
087-MW-Y20 (4.03)
087-PZ-001 (4.54)
087-MW-023 (6.10)
087-PZ-005 (N/A)
087-MW-102 (3.34)
087-MW-101 (3.31)
087-MW-121 (3.15)
087-MW-A26 (3.50)
115-W1-SO (7.41)
087-MW-019 (7.12)
087-PZ-003 (N/A)
087-MW-001 (6.92)
073-MW-BB11 (3.65)
073-PZ-001 (4.09)
073-MW-Y10 (4.19)
163-MW-CC08 (2.63)
079-MW-A2 (4.03)
079-MW-C6 (5.70)
088-PZ-003 (5.75)
088-MW-103 (3.53)
088-MW-001 (4.84)
184-MW-04 (4.24)
088-MW-101 (3.58)
088-MW-102 (5.05)
088-PZ-001 (5.39)
184-MW-05 (6.88)
134-MW-V09 (5.75)
134-PZ-001 (5.12)
134-PZ-003 (7.10)
134-MW-008 (6.59)
115-W5-SO (7.80)
088-MW-009 (7.47)
140-PZ-001 (6.24)
140-MW-06 (7.02)
125-PZ-001 (7.83)
184-MW-06 (9.03)
184-MW-C10 (9.96)
115-E3-SO (6.20)
090-PZ-05 (8.22)
140-MW-07 (5.42)
140-MW-08 (5.49)
125-MW-01 (6.50)
117-MW-A99 (5.93)
140-MW-1R (5.24)
115-E1-SO (7.02)
125-PZ-003 (5.59)
BARRIER WALLS
090-PZ-06 (10.06)
115-E2-SO (5.98)
117-MW-A62 (5.87)
090-MW-F14 (11.33)
154-MW-D01 (11.90)
154-MW-A01 (11.14)
154-MW-E08 (13.12)
154-MW-C6A (12.12)
154-MW-A5A (11.18)
154-MW-B6A (12.22)
154-MW-A06 (13.36)
SOCIETY HILL SLURRY WALL
124-MW-02 (5.95)
117-MW-A85 (6.19)
124-MW-10 (4.84)
117-MW-A05 (5.49)
117-MW-A89 (4.87)
153-MW-A13 (4.23)
117-MW-A14 (5.31)
153-MW-A15 (3.26)
153-MW-02 (N/A)
153-MW-05 (N/A)
HACKENSACK RIVER
LEGEND:
154-MW-E08 SHALLOW MONITORING WELL
(13.12) WATER LEVEL ELEVATION (FT, MSL)
1.0 GROUNDWATER CONTOUR (FT, MSL)
0 400 800
SCALE IN FEET
CORNERSTONE Environmental Group, LLC
This drawing represents intellectual property of Cornerstone Environmental Group, LLC. Any modification to the original by other than Cornerstone Environmental Group, LLC personnel violates its original purpose and as such is rendered void. Cornerstone Environmental Group, LLC will not be held liable for any changes made to this document without express written consent of the originator.
HONEYWELL
STUDY AREA 7
GROUNDWATER ELEVATION CONTOURS
SHALLOW ZONE - DECEMBER 18, 2012
FIGURE NO. 4-1
PROJECT NO. 120040
File: X:\PROJECTS\HONEYWELL\090354 - SA7_PROJECT DRAWINGS\2012- 4Q - Annual Figures\MIHONSF-01.dwg Layout: FIGURE 4-1 SHALLOW ZONE User: magda.mendola Mar 23, 2013 - 11:21am



LEGEND:

154–MW–E08	SHALLOW MONITORING WELL
(12.72)	WATER LEVEL ELEVATION (FT, MSL)
1.0	GROUNDWATER CONTOUR (FT, MSL)

0 400 800
SCALE IN FEET

CORNERSTONE Environmental Group, LLC

HONEYWELL
STUDY AREA 7

GROUNDWATER ELEVATION CONTOURS SHALLOW ZONE - JUNE 2011

FIGURE NO.

PROJECT NO. 090354

APPENDIX C-3

SA-5/6 SHALLOW GROUNDWATER REPORT
(Mactec, 2011)

SHALLOW OFFSITE GROUNDWATER DELINEATION AND REMEDY PROPOSAL REPORT

STUDY AREA 5 AND STUDY AREA 6 SOUTH
JERSEY CITY, NEW JERSEY

Prepared for

Honeywell

101 Columbia Road
Morristown, NJ 07962

Prepared by

MACTEC

MACTEC Engineering and Consulting, Inc.
200 American Metro Boulevard, Suite 113
Hamilton, New Jersey 08619

JULY 2011

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TABLES

FIGURES

APPENDICES

EXECUTIVE SUMMARY

This report addresses the reporting requirements for SA-5 shallow groundwater pursuant to Paragraph 63 of the *Consent Decree Regarding Remediation of the Study Area 5 Shallow Groundwater and the Site 79 Residential Properties* (SA-5 Consent Decree). This report also addresses the reporting requirements for shallow groundwater at the southeast perimeter of SA-6 South pursuant to Paragraphs 71 and 86(c) of the *Consent Decree Regarding Remediation and Redevelopment of Study Area 6 South* (SA-6 South Consent Decree).

The scope of work included:

1. The installation of two new groundwater monitoring wells (124-MW-10, 124-MW-11) along the southeast perimeter of SA-6 South at the Delco Levco Venture property and the installation of one new groundwater monitoring well (153-MW-05) at the portion of SA-5 south of Site 117 (Home Depot) and east of Site 153 (Former Morris Canal) at the Regnal Realty Property which is occupied by Langer Transport.
2. The collection of two rounds (October 2010, April 2011) of groundwater samples from the three new monitoring wells and two existing monitoring wells (117-MW-A14, 153-MW-02).
3. Laboratory analyses of unfiltered and filtered groundwater samples for total and hexavalent chromium.

Groundwater data from October 2010 and April 2011 indicate that all of the above wells were below the groundwater quality standard (GWQS) of (70 ug/l) for total chromium. Based upon these findings, the offsite shallow groundwater requirements of the SA-5 Consent Decree and SA-6 South Consent Decree have been satisfied and no further investigation regarding offsite shallow groundwater at SA-5 and SA-6 South is required. Groundwater monitoring wells 124-MW-10, 124-MW-11, 153-MW-02, and 153-MW-05 should be abandoned in accordance with the procedures required by NJDEP.

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

This Shallow Offsite Groundwater Delineation and Remedy Proposal Report was prepared by MACTEC Engineering and Consulting, Inc. (Mactec) on behalf of Honeywell to address shallow groundwater delineation at the portion of Study Area 5 (SA-5) downgradient of Site 117 (Home Depot) and Site 153 (Former Morris Canal) and along the southeast perimeter of Study Area 6 (SA-6) South in Jersey City, New Jersey (Site). A Site Location Map is included as **Figure 1**.

This report addresses the reporting requirements for SA-5 shallow groundwater pursuant to Paragraph 63 of the *Consent Decree Regarding Remediation of the Study Area 5 Shallow Groundwater and the Site 79 Residential Properties* (SA-5 Consent Decree) (United States District Court, 2010). This report also addresses the reporting requirements for shallow groundwater at the southeast perimeter of SA-6 South pursuant to Paragraphs 71 and 86(c) of the *Consent Decree Regarding Remediation and Redevelopment of Study Area 6 South* (SA-6 South Consent Decree) (United States District Court, 2008). The scope of work was performed in accordance with the Offsite Shallow Groundwater Sampling Plans for SA-5 and SA-6 South dated June 2010. Copies of the sampling plans and approval letter from plaintiffs are included for reference in **Appendix A**.

1.2 REPORT ORGANIZATION

The report contains the following sections:

1. *Introduction*. This section contains information on the purpose and scope of the report and report organization.
2. *Site Background*. This section contains background information on Site location, land use, geology, and hydrogeology.
3. *Summary of Groundwater Investigation*. This section contains a summary of the field operations including the groundwater monitoring well installations, sampling, and analytical results.
4. *Conclusions and Recommendations*. This section provides a summary of the findings and recommendations.

5. *References*. This section presents a list of references used in preparing this document.
6. *List of Acronyms and Abbreviations*. This section contains a list of acronyms and abbreviations used in this document.

2.0 SITE BACKGROUND

2.1 SA-5

SA-5 is comprised of five contiguous sites (NJDEP Site Nos. 079, 090, 117, 153, and 184) located along the eastern side of Route 440 in Jersey City, New Jersey. A Site location map is included as **Figure 1**. The specific sites involved in the offsite shallow groundwater investigation included Site 117 (Home Depot), Site 153 (Former Morris Canal), and the Regnal Realty, Inc. property (occupied by Langer Transport Corp.) located south of Site 117 and east of Site 153

2.2 SA-6 SOUTH

SA-6 South includes six contiguous sites (NJDEP Site Nos. 073, 124, 125, 134, 140, and 163) located along Kellogg Street, to the southwest of SA-5 (see **Figure 1**). SA-6 South also includes two additional properties, the Cordova Property and the Boatyard Property. The SA-6 South Consent Decree specifies additional sampling to complete delineation of shallow groundwater in the area to the southeast of SA-6 South. For this purpose, two groundwater monitoring wells were installed at the northern perimeter of the Delco Levco Venture Property (occupied by K-Mart / Pathmark shopping center), located across Kellogg Street from SA-6 South.

2.3 REGIONAL AND SITE GEOLOGY HYDROGEOLOGY

A shallow groundwater zone occurs within the fill material above the meadow mat, where present. Based on previous investigations at SA-5, SA-6 and SA-7, the meadow mat is present below the fill in the area mainly west of Route 440 and pinches out east of Route 440. Deeper groundwater impacts within native deposits below the fill are being addressed as part of the regional investigation and remedy associated with SA-7. Thus, the activities detailed in this report pertain to the shallow zone.

3.0 SUMMARY OF GROUNDWATER INVESTIGATION

3.1 GROUNDWATER MONITORING WELL INSTALLATION

The general locations of the three new offsite groundwater monitoring wells required to be installed downgradient of SA-5 and SA-6 South are shown in Exhibit A of the SA-5 Consent Decree **(Appendix B)**. The well installed downgradient of SA-5 was installed on the property owned by Regnal Realty Company which is occupied by Langer Transport Corporation. The wells installed downgradient of SA-6 South were installed on the property owned by Delco-Levco Venture which encompasses a retail shopping center. Honeywell negotiated access agreements with the respective property owners to install the wells at the selected locations.

All field activities were performed in accordance with the Offsite Shallow Groundwater Delineation Sampling Plans, a Site-Specific Health and Safety Plan (HASP) and applicable portions of the NJDEP Technical Requirements for Site Remediation and the NJDEP Field Sampling Procedures Manual. Site-specific Health and Safety Plans for SA-5 and SA-6 South were implemented to address health and safety of workers and the surrounding public during the field activities. There were no field conditions that warranted deviation from either HASP.

Two groundwater monitoring wells (124-MW-10 and 124-MW-11) were installed along the southeast perimeter of SA-6 South at the Delco Levco Venture property on June 9, 2010. One groundwater monitoring well (153-MW-05) was installed at the portion of SA-5 outside and downgradient of Site 117 (Home Depot) and Site 153 (Former Morris Canal), (Regnal Realty Property), on October 5, 2010. See **Figure 2** for groundwater monitoring well locations. The three wells were installed and constructed by B & B Drilling, Inc. of Netcong, New Jersey; a State of New Jersey licensed well driller, utilizing a hollow stem auger (HSA) rig. Copies of the well permits, well records, well logs, and Form A well certifications for well installation are included in **Appendix C**. It should be noted that the well construction details on the well records for monitoring well 124-MW-10 and 124-MW-11 were inadvertently switched; the correct well construction details are indicated on the well logs and Form A well certifications.

All monitoring wells were constructed using 2" schedule 40 PVC well materials and screened across the water table using 10 slot screen. Well depths and screen intervals are indicated below:

- 124-MW-10 (11 feet deep): screened interval from 3 to 11 feet bgs
- 124-MW-11 (8 feet deep): screened from 2 to 8 feet bgs
- 153-MW-05 (12 feet deep): screened from 5 to 12 feet bgs

The top of each well screen was set 6-12 inches above the water table. The top of the sand pack placed around each of the well screens was installed to 6-12 inches above the top of the well screens and a 1-3 foot thick hydrated bentonite seal was placed above the sand pack. The remainder of the annular space was filled with cement/bentonite grout and the top of each well was fitted with a bolt-down flush-mount lid. Upon completion of the well installations, the wells were developed by pumping to remove residual fine materials from the borehole and to ensure adequate water flow into the well. The monitoring wells were surveyed by Maser Consulting P.A., a licensed land surveyor, on November 16, 2010. Copies of the Form B well certifications are included in **Appendix C**.

3.2 GROUNDWATER LEVEL MEASUREMENTS

Two rounds of synoptic groundwater level measurements were collected from monitoring wells and piezometers throughout SA-5 and SA-6 South (approximately 40 wells total) in conjunction with the groundwater sampling activities on October 19, 2010 and April 19, 2011 (existing wells and new wells). The additional wells were included for water level measurements to provide more robust coverage and additional data for evaluation of groundwater depth and flow direction. Water level measurements were collected using an electronic water level indicator. The depth of the groundwater table ranged from approximately 1 foot (mainly in the western portion of SA-6 South) to 12 feet bgs (at SA-5 Site 117), with the majority of water level measurements generally between 2 to 7 feet bgs. The water level measurements are presented in **Tables 1 and 2** and were used to determine groundwater elevations and prepare groundwater contour maps.

The groundwater maps were prepared using reference point elevation measurements (surveyed top of casing elevations) and depth to groundwater measurements recorded on October 19, 2010 and April 19, 2011. Based on the groundwater elevation contour maps and report forms (**Appendix D**) generated during the groundwater investigation referenced above, the overall direction of groundwater flow in the shallow zone across the Site is to the west/southwest towards the Hackensack River.

3.3 GROUNDWATER SAMPLING AND RESULTS

The SA-5 Consent Decree required coordination of the sampling schedule of the SA-5 and SA-6 South groundwater sampling events. Additionally, the SA-5 Consent Decree required two rounds of groundwater samples collected no less than 6 months (but no more than 12 months) apart. Therefore, upon completion of the installation of the 153-MW-05 on October 5, 2010, and in accordance with NJDEP sampling guidelines that require the first round of sampling of new groundwater monitoring wells to be no less than 2 weeks after installation, the first round of sampling for all groundwater monitoring wells was completed on October 19, 2010. The second round of sampling was scheduled for 6 months after the first round.

The groundwater sampling activities were completed on October 19, 2010, April 19, 2011, and April 26, 2011. It should be noted that the second round of groundwater sampling originally occurred on April 19, 2011. However, the analytical laboratory (Accutest) analyzed the groundwater samples for hexavalent chromium utilizing the wrong analytical method (USEPA Method 7196). Therefore, the data from the April 19, 2011 sampling event was not used and the wells were re-sampled by Mactec on April 26, 2011. Monitoring wells included in the sampling program are identified below:

- 117-MW-A14 (existing well)
- 124-MW-10 (new well)
- 124-MW-11 (new well)
- 153-MW-02 (existing well)
- 153-MW-05 (new well)

Although sampling of 153-MW-02 was not required by the SA-5 Consent Decree, Honeywell voluntarily elected to sample this existing monitoring well to provide additional data coverage for SA-5 in the area south of Site 117 and east of Site 153. The monitoring wells were sampled utilizing volume-averaged purging and sampling methods in accordance with sampling plans in **Appendix A**. Field sampling procedures included water level measurements and field parameters including pH, temperature, conductivity, turbidity, dissolved oxygen (DO), and oxidation-reduction potential (ORP). The groundwater sampling forms are included in **Appendix E.**

Results for field parameters indicated that pH values ranged from 6.17 to 7.05 standard units. DO values ranged from zero up to approximately 9.4 mg/l. ORP values were negative (generally ranging from -45 mV to -159 mV) in the majority of wells, indicating reducing conditions in the shallow groundwater zone.

Field sampling procedures also included the field filtering of the groundwater samples using an in-line filter apparatus equipped with a 0.45 micron pore-diameter filter. The unfiltered and filtered groundwater samples collected on October 19, 2010 and April 26, 2011 were analyzed for total and hexavalent chromium. Groundwater sample results are presented in **Table 1 and Figure 2.** The laboratory data reports are included in **Appendix F**.

Groundwater samples (both unfiltered and filtered) collected from monitoring wells 117-MW-A14, 124-MW-10, 124-MW-11, 153-MW-02, and 153-MW-05 during the October 2010 and April 2011 sampling events did not exhibit total and hexavalent chromium concentrations above the GWQS for total chromium (70 ug/l).

Total chromium was detected at concentrations ranging from 4.1 ug/l to 30.2 ug/l in offsite delineation wells 124-MW-10 and 124-MW-11 installed at the Levco Delco Venture Property. Total chromium was not detected in offsite delineation wells 153-MW-02 and 153-MW-05 installed at the Regnal Property. Hexavalent chromium was not detected above the laboratory method detection limit in the offsite delineation wells on the Regnal Property (south of Site 117) or the Levco Delco Venture Property (southeast of SA-6 South). Total chromium (38.9 ug/l to 43.7 ug/l) and hexavalent chromium (21 ug/l to 44 ug/l) were detected in monitoring well 117-MW-A14, located in the southeast portion of the Site 117. These concentrations are less than previous RI sampling results for this monitoring well.

3.4 ANALYTICAL PARAMETERS AND METHODS

The unfiltered and filtered groundwater samples were analyzed for total and hexavalent chromium by Accutest Laboratories, Dayton, NJ (NJ Certification No. 12129). Specific analytical methodology and information is provided below:

Total Chromium

- Analytical methodology: USEPA Method 200.8
- Holding time: 6 months from sample collection
- Sample containers: 500 to 950 milliliters polyethylene
- Preservative: Nitric acid

Hexavalent Chromium

- Analytical methodology: USEPA Method 7199
- Holding time: 24 hours from sample collection
- Sample containers: 500 milliliter polyethylene
- Preservative: None

3.5 UALITY ASSURANCE UALITY CONTROL

The sampling program included the collection and analyses of the following Quality Assurance/Quality Control (QA/QC) samples: one field blank per day during the groundwater sampling programs and duplicate samples at a frequency of five percent of the total number of groundwater samples collected (one duplicate sample). Sampling methods and procedures were consistent with the requirements specified in the project QAPP and the NJDEP Field Sampling Procedures Manual.

Sample containers for the sampling program were provided by the analytical laboratory. Following sample collection, the sample containers were placed in coolers with ice for delivery to the laboratory. Chain-of-custody documentation was maintained through sample collection, shipment, storage, and analysis, and copies of chain-of-custody are included in the laboratory data deliverable package.

3.6 DATA MANAGEMENT AND VALIDATION

All data packages were checked for completeness, compliance with holding times and verification that the requested analyses were completed. The non-conformance

summary was reviewed, as well as the batch QA/QC tables. The Hazsite EDDs are included in **Appendix F.** Laboratory data packages JA59191, JA59191A, JA59191B, JA74098, JA74099, and JA74100 were validated following NJDEP protocols. Overall, the data collected is deemed usable as submitted or qualified. The aspects of the data that required qualification are discussed further in the data validation reports prepared by Validata, LLC, which are included in **Appendix G.**

4.0 CONCLUSIONS AND RECOMMENDATIONS

Data for offsite delineation wells located south of SA-5 Site 117 (153-MW-02, 153-MW-05) and southeast of SA-6 South (124-MW-10, 124-MW-11) indicate that total chromium concentrations were below the GWQS and hexavalent chromium was not detected. Total chromium and hexavalent chromium were detected in monitoring well 117-MW-A14, located in the southeast portion of the Site 117. These concentrations are below the GWQS and less than previous RI sampling results for this monitoring well.

Based on the sampling results, shallow groundwater delineation is completed in accordance with the relevant requirements of the SA-5 Consent Decree and SA-6 South Consent Decree and further investigation regarding offsite shallow groundwater at SA-5 and SA-6 South is not required.

Following review and approval of this report by plaintiffs and the NJDEP, the offsite groundwater monitoring wells (124-MW-10, 124-MW-11, 153-MW-02, 153-MW-05) should be properly abandoned in accordance with NJDEP requirements.

5.0 REFERENCES

HydroQual, Inc., 2007. Final Groundwater Investigation Report, Study Area 7. February 2, 2007. HWEL 002.001.11

MACTEC Engineering and Consulting, Inc., 2008. Supplemental Remedial Investigation Report, Remedial Action Selection Report, Remedial Action Work Plan for Chromium, Study Area 6 South, Jersey City, New Jersey. December 2008.

MACTEC Engineering and Consulting, Inc., 2007. Supplemental Remedial Investigation Report, Remedial Action Selection Report, Remedial Action Work Plan, Study Area 5, Jersey City, New Jersey. July 2007.

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New Jersey Department of Environmental Protection, 2009. Ground Water Quality Standards: N.J.A.C. 7:9C; last amended November 4, 2009.

New Jersey Department of Environmental Protection, 2005. Field Sampling Procedures Manual; last revised August 2005.

Tetra Tech NUS, Inc., 2000. Draft Remedial Investigation Report Addendum, Study Area 6 NJDEP Site No. 073, 087, 088, 124, 125, 134, 140, and 163, Jersey City, New Jersey. July 2000.

Tetra Tech NUS, Inc., 1999. Draft Remedial Investigation Report Addendum, Study Area 5. November 2000.

United States District Court, District of New Jersey, 2010. Consent Decree Regarding Remediation of the Study Area 5 Shallow Groundwater and the Site 79 Residential Properties. January 21, 2010.

United States District Court, District of New Jersey, 2008. Consent Decree Regarding Remediation and Redevelopment of Study Area 6 South. November 2008.

6.0 LIST OF ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
DO	Dissolved Oxygen
GWQS	Ground Water Quality Standards
HASP	Health and Safety Plan
ug/l	micrograms per liter
N.J.A.C.	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection
ORP	Oxidation-Reduction Potential
OSHA	Occupational Safety and Health Administration
ppb	parts per billion
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
TRSR	NJDEP Technical Requirements for Site Remediation
USEPA	United States Environmental Protection Agency

Table 1
Groundwater Elevations - 10/19/10
Study Area 5/Study Area 6 South
Jersey City, New Jersey

Well Number	Northing (Y)	Easting (X)	Depth from TOC to Water (feet)	TOC Elevation NGVD 1929	Elevation NGVD 1929 from TOC to Water (Elev.)
073-MW-5	685443.70	601570.65	3.27	6.81	3.54
073-MW-BB11	685543.00	601475.00	4.51	7.81	3.3
073-MW-Y10	685388.00	601665.00	2.56	6.36	3.8
073-PZ-001	685487.973	601646.061	3.38	7.24	3.86
073-PZ-002	685489.826	601641.463	Not Measured	7.26	Not Available
124-MW-02	684150.00	603140.62	2.55	8.92	6.37
124-MW-07	684188.65	603259.82	4.14	9.67	5.53
124-MW-09	684417.78	602762.18	6.57	12.24	5.67
124-MW-10	684042.80	602764.90	5.14	10.06	4.92
124-MW-11	683800.10	603010.70	4.25	9.05	4.8
125-MW-01	684704.25	602679.84	2.73	9.85	7.12
125-PZ-001	684758.897	602616.484	2.41	9.5	7.09
125-PZ-002	684763.060	602605.630	Not Measured	9.31	Not Available
125-PZ-003	684482.178	602722.997	3.47	8.89	5.42
125-PZ-004	684486.933	602729.178	Not Measured	8.93	Not Available
134-MW-02	684863.100	602014.200	1.98	7.36	5.38
134-MW-Q08	684965.30	602199.03	2.14	8.32	6.18
134-MW-V09	685185.61	601867.88	2.51	7.91	5.4
134-PZ-001	685163.671	601817.153	2.32	7.47	5.15
134-PZ-002	685161.188	601813.205	Not Measured	7.81	Not Available
134-PZ-003	685110.208	602133.016	1.81	8.34	6.53
134-PZ-004	685111.000	602126.361	Not Measured	8.22	Not Available
140-MW-01	685043.000	602282.000	2.10	9.22	7.12
140-MW-04	684562.64	602314.58	2.47	7.27	4.8
140-MW-06	684834.00	602540.00	1.65	8.27	6.62
140-MW-07	684702.14	602440.97	2.63	8.12	5.49
140-MW-08	684615.800	602410.900	2.82	8.13	5.31
140-MW-106	684753.43	602162.00	2.03	7.68	5.65
140-PZ-001	684845.539	602237.112	2.48	8.29	5.81
140-PZ-002	684851.282	602239.880	Not Measured	8.08	Not Available
163-MW-1	684846.000	601881.000	2.51	7	4.49
163-MW-2	685200.000	601450.000	5.74	8.49	2.75
163-MW-R05	684776.72	601978.56	2.39	7.09	4.7
117-MW-A89	683955.18	603352.69	8.4	13.17	4.77

Prepared by: MEM 5/31/11
Checked by: MEB 6/17/11

Table 1
Groundwater Elevations - 10/19/10
Study Area 5/Study Area 6 South
Jersey City, New Jersey

Well Number	Northing (Y)	Easting (X)	Depth from TOC to Water (feet)	TOC Elevation NGVD 1929	Elevation NGVD 1929 from TOC to Water (Elev.)
117-MW-A14	683698.66	603651.33	11.75	17.33	5.58
153-MW-A13	Not Available	Not Available	5.67	9.62	3.95
153-MW-A15	Not Available	Not Available	8.17	11	2.83
153-MW-5	683167.80	603501.10	7.05	11.12	4.07
153-MW-2	Not Available	Not Available	10.68	Not Available	Not Available

TOC = Top of Casing
NGVD 1929 = National Geodetic Vertical Datum of 1929

Table 2
Groundwater Elevations - 04/19/11
Study Area 5/Study Area 6 South
Jersey City, New Jersey

Well Number	Northing (Y)	Easting (X)	Depth from TOC to Water (feet)	TOC Elevation NGVD 1929	Elevation NGVD 1929 from TOC to Water (Elev.)
073-MW-3	Not Available	Not Available	7.58	Not Available	Not Available
073-MW-4	Not Available	Not Available	3.79	Not Available	Not Available
073-MW-5	685443.70	601570.65	2.75	6.81	4.06
073-MW-BB11	685543.00	601475.00	3.78	7.81	4.03
073-MW-Y10	685388.00	601665.00	7.88	6.36	-1.52
073-PZ-001	685487.973	601646.061	2.95	7.24	4.29
073-PZ-002	685489.826	601641.463	Not Measured	7.26	Not Available
124-MW-02	684150.00	603140.62	1.68	8.92	7.24
124-MW-07	684188.65	603259.82	3.35	9.67	6.32
124-MW-09	684417.78	602762.18	5.4	12.24	6.84
124-MW-10	684042.80	602764.90	4.95	10.06	5.11
124-MW-11	683800.10	603010.70	3.03	9.05	6.02
125-MW-01	684704.25	602679.84	1.78	9.85	8.07
125-PZ-001	684758.897	602616.484	1.35	9.5	8.15
125-PZ-002	684763.060	602605.630	Not Measured	9.31	Not Available
125-PZ-003	684482.178	602722.997	2.59	8.89	6.3
125-PZ-004	684486.933	602729.178	Not Measured	8.93	Not Available
134-MW-02	684863.100	602014.200	1.48	7.36	5.88
134-MW-Q08	684965.30	602199.03	0.99	8.32	7.33
134-MW-V09	685185.61	601867.88	2.56	7.91	5.35
134-PZ-001	685163.671	601817.153	1.9	7.47	5.57
134-PZ-002	685161.188	601813.205	Not Measured	7.81	Not Available
134-PZ-003	685110.208	602133.016	0.78	8.34	7.56
134-PZ-004	685111.000	602126.361	Not Measured	8.22	Not Available
140-MW-01	685043.000	602282.000	0.94	9.22	8.28
140-MW-04	684562.64	602314.58	1.27	7.27	6
140-MW-06	684834.00	602540.00	0.82	8.27	7.45
140-MW-07	684702.14	602440.97	1.82	8.12	6.3
140-MW-08	684615.800	602410.900	1.85	8.13	6.28
140-MW-106	684753.43	602162.00	1.04	7.68	6.64
140-PZ-001	684845.539	602237.112	1.23	8.29	7.06
140-PZ-002	684851.282	602239.880	Not Measured	8.08	Not Available
163-MW-1	684846.000	601881.000	1.85	7	5.15
163-MW-2	685200.000	601450.000	Not Measured	8.49	Not Available

Prepared by: MEM 5/31/11
Checked by: MEB 6/17/11

Table 2
Groundwater Elevations - 04/19/11
Study Area 5/Study Area 6 South
Jersey City, New Jersey

Well Number	Northing (Y)	Easting (X)	Depth from TOC to Water (feet)	TOC Elevation NGVD 1929	Elevation NGVD 1929 from TOC to Water (Elev.)
163-MW-R05	684776.72	601978.56	1.41	7.09	5.68
117-MW-A89	683955.18	603352.69	7.93	13.17	5.24
117-MW-A14	683698.66	603651.33	11.39	17.33	5.94
153-MW-A13	Not Available	Not Available	5.29	9.62	4.33
153-MW-A15	Not Available	Not Available	7.74	11	3.26
153-MW-5	683167.80	603501.10	6.39	11.12	4.73
153-MW-2	Not Available	Not Available	9.96	Not Available	Not Available

TOC = Top of Casing
NGVD 1929 = National Geodetic Vertical Datum of 1929

Prepared by: MEM 5/31/11
Checked by: MEB 6/17/11

TABLE 3
OFFSITE GROUNWATER MONITORING WELL SAMPLE RESULTS
STUDY AREA 5 / STUDY AREA 6 SOUTH
JERSEY CITY, NEW JERSEY

Location	Units	GWQS	117-MW-A14	117-MW-A14	117-MW-A14	117-MW-A14
Sample Date			10/19/2010	10/19/2010	4/26/2011	4/26/2011
Lab Sample ID			JA59191-6	JA59191-6F	JA74100-1	JA74100-1F
Matrix			Water	Water Filtered	Water	Water Filtered
CHROMIUM	UG/L	70	40.7	38.9	43.7	43.6
HEXAVALENT CHROMIUM	UG/L	NA	31J	21J	40J	44J

Location	Units	GWQS	124-MW-10	124-MW-10	124-MW-10	124-MW-10	124-MW-10 Dup	124-MW-10 Dup
Sample Date			10/19/2010	10/19/2010	4/26/2011	4/26/2011	4/26/2011	4/26/2011
Lab Sample ID			JA59191-4	JA59191-4F	JA74098-1	JA74098-1F	JA74098-3	JA74098-3F
Matrix			Water	Water Filtered	Water	Water Filtered	Water	Water Filtered
CHROMIUM	UG/L	70	15.8	11.3	5.3	5.4	5	5
HEXAVALENT CHROMIUM	UG/L	NA	5.5UJ	5.5UJ	5.5UJ	5.5UJ	5.5UJ	5.5UJ

Location	Units	GWQS	124-MW-11	124-MW-11	124-MW-11	124-MW-11
Sample Date			10/19/2010	10/19/2010	4/26/2011	4/26/2011
Lab Sample ID			JA59191-5	JA59191-5F	JA74098-2	JA74098-2F
Matrix			Water	Water Filtered	Water	Water Filtered
CHROMIUM	UG/L	70	30.2	4.0U	4.1	4.0U
HEXAVALENT CHROMIUM	UG/L	NA	5.5UJ	5.5UJ	5.5UJ	5.5UJ

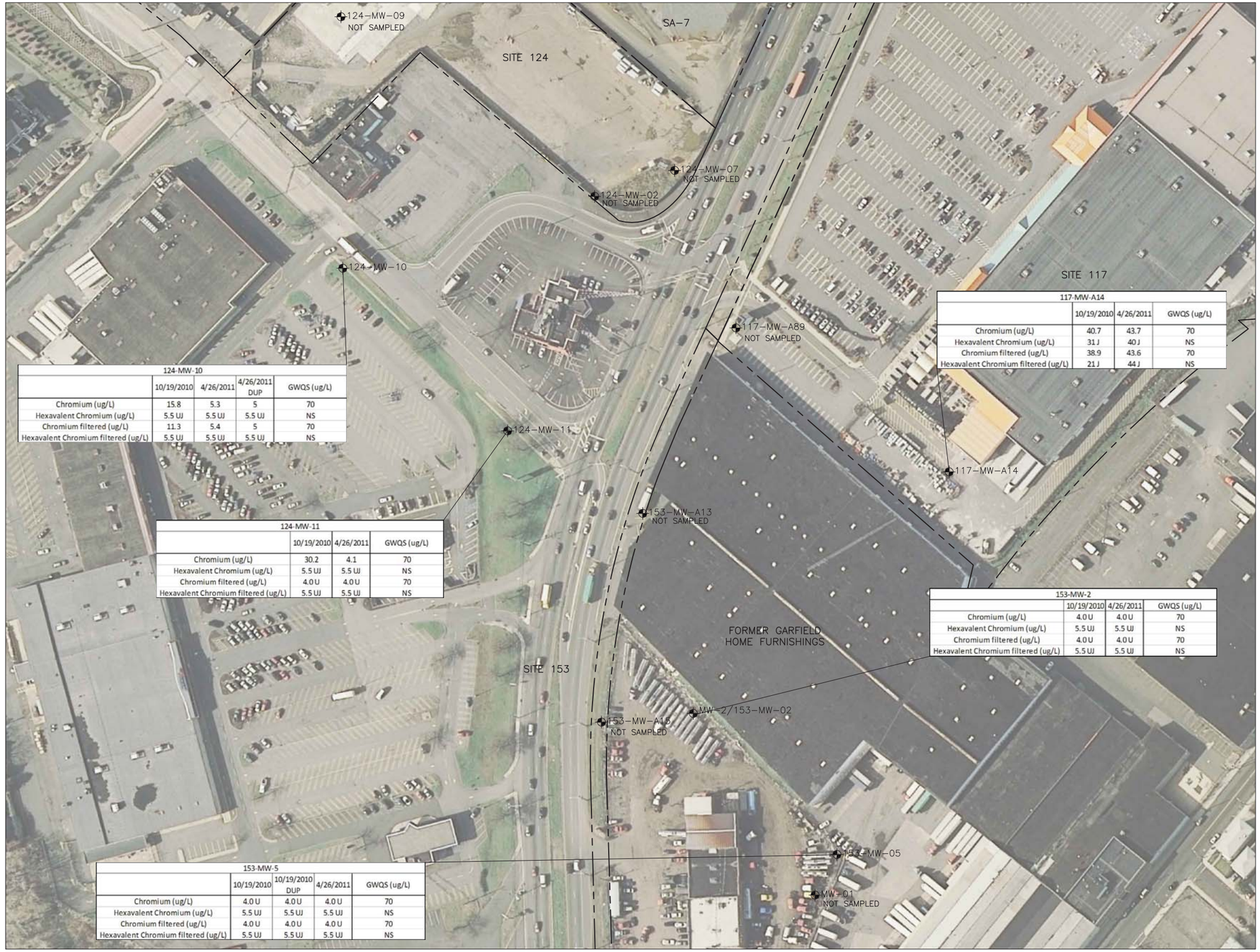
Location	Units	GWQS	153-MW-2	153-MW-2	153-MW-2	153-MW-2
Sample Date			10/19/2010	10/19/2010	4/26/2011	4/26/2011
Lab Sample ID			JA59191-3	JA59191-3F	JA74099-2	JA74099-2F
Matrix			Water	Water Filtered	Water	Water Filtered
CHROMIUM	UG/L	70	4.0U	4.0U	4.0U	4.0U
HEXAVALENT CHROMIUM	UG/L	NA	5.5UJ	5.5UJ	5.5UJ	5.5UJ

Location	Units	GWQS	153-MW-5	153-MW-5	153-MW-5 Dup	153-MW-5 Dup	153-MW-5	153-MW-5
Sample Date			10/19/2010	10/19/2010	10/19/2010	10/19/2010	4/26/2011	4/26/2011
Lab Sample ID			JA59191-1	JA59191-1F	JA59191-2	JA59191-2F	JA74099-1	JA74099-1F
Matrix			Water	Water Filtered	Water	Water Filtered	Water	Water Filtered
CHROMIUM	UG/L	70	4.0U	4.0U	4.0U	4.0U	4.0U	4.0U
HEXAVALENT CHROMIUM	UG/L	NA	5.5UJ	5.5UJ	5.5UJ	5.5UJ	5.5UJ	5.5UJ

NA: Not Available
NJDEP GWQC: New Jersey Department of Environmental Protection; Higher of Practical Quantitation Level (PQL) and Groundwater Quality Criterion (GWQC)
ug/l: micrograms per liter or parts per billion (ppb)
U: Not Detected
J: Estimated Concentration

Prepared by: VHL 5/24/2011
Reviewed by: MEM 5/24/2011

N



124-MW-10				
	10/19/2010	4/26/2011	4/26/2011 DUP	GWQS (ug/L)
Chromium (ug/L)	15.8	5.3	5	70
Hexavalent Chromium (ug/L)	5.5 UJ	5.5 UJ	5.5 UJ	NS
Chromium filtered (ug/L)	11.3	5.4	5	70
Hexavalent Chromium filtered (ug/L)	5.5 UJ	5.5 UJ	5.5 UJ	NS

124-MW-11			
	10/19/2010	4/26/2011	GWQS (ug/L)
Chromium (ug/L)	30.2	4.1	70
Hexavalent Chromium (ug/L)	5.5 UJ	5.5 UJ	NS
Chromium filtered (ug/L)	4.0 U	4.0 U	70
Hexavalent Chromium filtered (ug/L)	5.5 UJ	5.5 UJ	NS

153-MW-5				
	10/19/2010	10/19/2010 DUP	4/26/2011	GWQS (ug/L)
Chromium (ug/L)	4.0 U	4.0 U	4.0 U	70
Hexavalent Chromium (ug/L)	5.5 UJ	5.5 UJ	5.5 UJ	NS
Chromium filtered (ug/L)	4.0 U	4.0 U	4.0 U	70
Hexavalent Chromium filtered (ug/L)	5.5 UJ	5.5 UJ	5.5 UJ	NS

117-MW-A14			
	10/19/2010	4/26/2011	GWQS (ug/L)
Chromium (ug/L)	40.7	43.7	70
Hexavalent Chromium (ug/L)	31 J	40 J	NS
Chromium filtered (ug/L)	38.9	43.6	70
Hexavalent Chromium filtered (ug/L)	21 J	44 J	NS

153-MW-2			
	10/19/2010	4/26/2011	GWQS (ug/L)
Chromium (ug/L)	4.0 U	4.0 U	70
Hexavalent Chromium (ug/L)	5.5 UJ	5.5 UJ	NS
Chromium filtered (ug/L)	4.0 U	4.0 U	70
Hexavalent Chromium filtered (ug/L)	5.5 UJ	5.5 UJ	NS

LEGEND

MONITORING WELL

PROPERTY BOUNDARY

GWQS – NJDEP GROUNDWATER QUALITY STANDARD
ug/L – MICROGRAMS PER LITER OR PARTS PER BILLION (ppb)
NS – NO STANDARD
U – NOT DETECTED
J – ESTIMATED CONCENTRATION

0 75 150 300
SCALE IN FEET

SOURCE MAP REFERENCE: NEW JERSEY 2007–2008 HIGH RESOLUTION ORTHOGRAPHY, MRSID 5K TILES. NJ OFFICE OF INFORMATION TECHNOLOGY, (NJOIT). OFFICE OF GEOGRAPHY INFORMATION SYSTEMS, (OGIS). 200810.

REV.	DATE	STATUS	PRPD BY	CHKD BY

MACTEC PROJECT No. 3480100027
DRAWING: GW RESULTS

PREPARED/DATE: STR 05/19/11

CHECKED/DATE: MEM 06/17/11

MACTEC
MACTEC Engineering and Consulting, Inc.
200 American Metro Boulevard, Suite 113
Hamilton, NJ 08619

FIGURE 2
GROUNDWATER MONITORING WELL LOCATIONS /RESULTS
SA-5 AND SA 6 SOUTH
JERSEY CITY, NEW JERSEY

P:\CAD\VIONEY\WELL\JERSEY CITY\SA 6 SOUTH\SA5 SA6 SHALLOW WELLS\CURRENT DRAWINGS\GW RESULTS.dwg Mon, 20 Jun 2011 - 1:28pm dheath Layout: Layout

LEGEND

124-MW-11 4.80 — MONITORING WELL LOCATION AND GROUNDWATER ELEVATION DATA (FEET, NGVD29)

PROPERTY BOUNDARY

5 — GROUNDWATER ELEVATION CONTOUR (FEET, NGVD29) (DASHED WHERE INFERRED)

SLURRY WALL

NA = ELEVATION DATA NOT AVAILABLE

NM = NOT MEASURED

GROUNDWATER FLOW DIRECTION

0 40 80 160
SCALE IN FEET

REV.	DATE	STATUS	PRPD BY	CHKD BY
A	07/06/11	ADDED MONITORING WELL 140-MW-08	DL	MEB

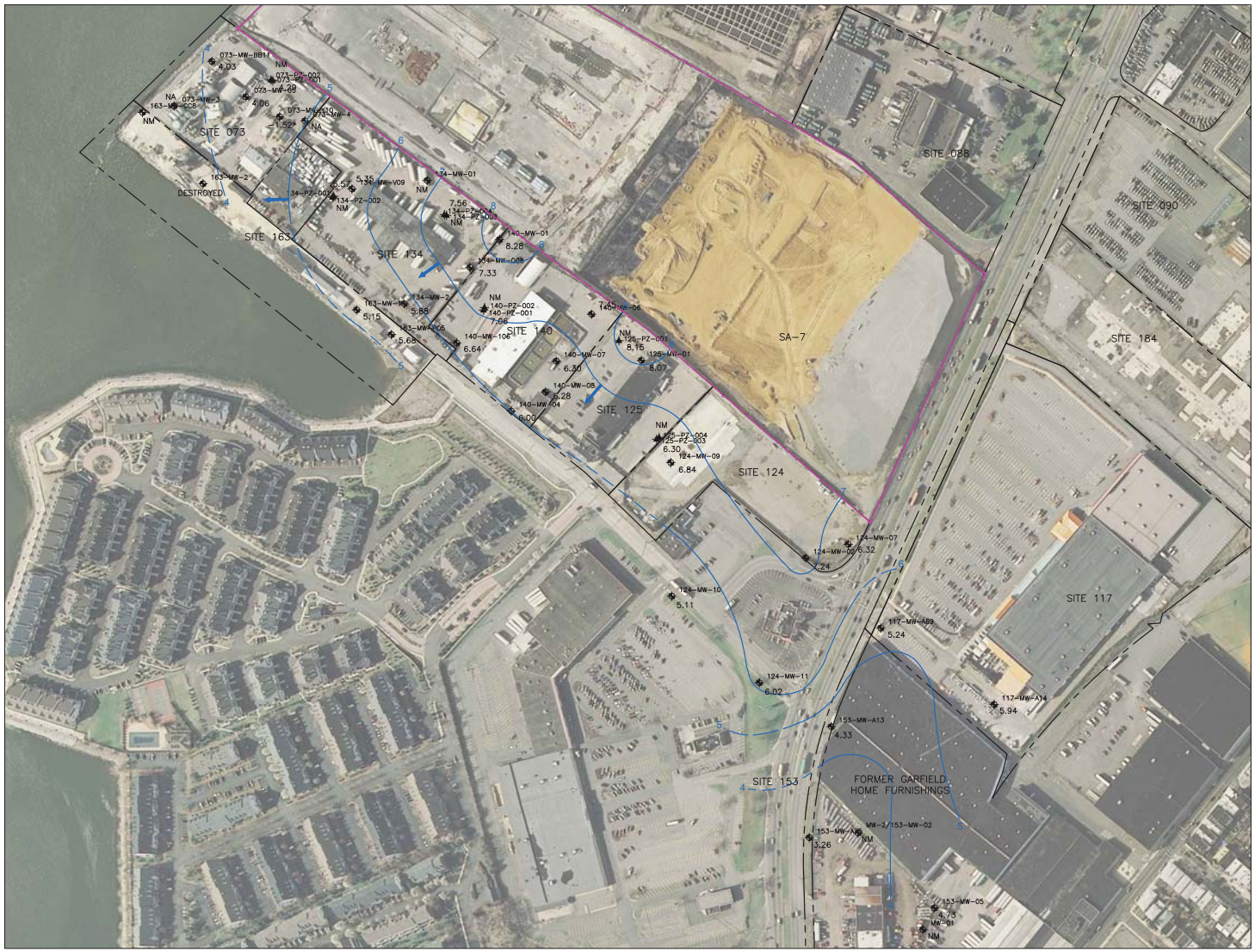
MACTEC PROJECT No. 3480100027
DRAWING: GWC 101910

PREPARED/DATE: DL 06/14/11

CHECKED/DATE: MEB 07/06/11

MACTEC
MACTEC Engineering and Consulting, Inc.
200 American Metro Boulevard, Suite 113
Hamilton, NJ 08619

FIGURE D-1
SHALLOW GROUNDWATER ELEVATION CONTOUR MAP - OCTOBER 19, 2010
SA-5 AND SA 6 SOUTH
JERSEY CITY, NEW JERSEY



LEGEND

124-MW-11 6.02 — MONITORING WELL LOCATION AND GROUNDWATER ELEVATION DATA (FEET, NGVD29)

PROPERTY BOUNDARY

5 — GROUNDWATER ELEVATION CONTOUR (FEET, NGVD29) (DASHED WHERE INFERRED)

SLURRY WALL

NM = NOT MEASURED

* ANOMALOUS VALUE NOT USED TO CONSTRUCT CONTOURS

GROUNDWATER FLOW DIRECTION

0 75 150 300
SCALE IN FEET

REV.	DATE	STATUS	PRPD BY	CHKD BY
A	07/06/11	ADDED MONITORING WELL 140-MW-08	DL	MEB

MACTEC PROJECT No. 3480100027
DRAWING: GWC 041911

PREPARED/DATE: DL 06/14/11

CHECKED/DATE: MEB 07/06/11

MACTEC Engineering and Consulting, Inc.
200 American Metro Boulevard, Suite 113
Hamilton, NJ 08619

FIGURE D-2
SHALLOW GROUNDWATER ELEVATION CONTOUR MAP - APRIL 19, 2011
SA-5 AND SA 6 SOUTH
JERSEY CITY, NEW JERSEY

R:\JOBS\WONEWELL\PROJ COY\SA 6 SOUTH\JOBS 395 SHALLOW WELLS\CURRENT DRAWINGS\GWC 041911.dwg Fri, 08 Jul 2011 - 9:56am dlewis Layout: Layout1

APPENDIX D

SOIL BORING LOGS
(2009 to 2014)

Honeywell SA-5; Site 153

SITE INFO: Langer Transport
PROJECT NO: 3480050164
BORING ID: 153-SB-001
DATE BEGAN: 06/10/09
DATE FINISHED: 06/10/09
INSPECTOR: B.Senna/J.Bacchus
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610DT
SAMPLING TOOL: 4-ft macrocore
COMPLETION DEPTH: 20 ft bgs
GW DEPTH: 8 ft bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	R-1	N/A	4.0		0.0 - 2.0' FILL: Dark brown/brown f-c sand, some silt, trace fine gravel and coal	0.0	153-SB-001-0002 collected from 1.0-1.5' bgs @ 08:20
	2.0					2.0 - 6.0' FILL: Gray/brown f-c sand, some fine gravel, trace coal, clinker, and ash; trace brick from 2.0-4.0'; moist		
	4.0	R-2	N/A	4.0			0.0	153-SB-001-0204 collected from 3.5-4.0' bgs @ 08:25
	5.0							153-SB-001-0406 collected from 5.0-5.5' bgs @ 08:30
	6.0					6.0 - 7.5' FILL: Light brown/light gray f-c sand, some fine gravel and shells, trace glass and clinker; moist		
	7.0							153-SB-001-0608 collected from 7.0-7.5' bgs @ 08:35
▽	8.0	R-3	N/A	3.0		7.5 - 8.0' OL: Very dark brown (10YR 2/2) silty clay, trace organic material; moist	0.0	
	9.0					8.0 - 11.0' SM: Brown (7.5YR 4/3) silty sand, trace clay from 8.0-8.25'; some coarser sand and fine gravel from 9.0-9.5'; wet		153-SB-001-0810 collected from 8.5-9.0' bgs @ 08:40
	11.0					11.0 - 12.0' No recovery		153-SB-001-1012 collected from 10.5-11.0' bgs @ 08:45; held for contingency
	12.0	R-4	N/A	4.0		12.0 - 14.5' GW: Reddish brown (5YR 4/3) f-m gravel and f-c sand; wet	0.0	
	14.0							153-SB-001-1214 collected from 13.5-14.0' bgs @ 08:50; held for contingency
	15.0					14.5 - 18.0' SW: Reddish brown (5YR 4/4) f-c sand, some f-m gravel from 16.0-18.0', trace silt; wet		153-SB-001-1416 collected from 15.0-15.5' bgs @ 08:55; held for contingency
	16.0	R-5	N/A	4.0			0.0	
	17.0							
	18.0					18.0 - 20.0' SP: Reddish brown (5YR 4/4) fine sand, trace silt; wet; end of boring at 20.0'		
	19.0							
	20.0							

PREPARED BY: JB
CHECKED BY: BS

Honeywell SA-5; Site 153

SITE INFO: Langer Transport
PROJECT NO: 3480050164
BORING ID: 153-SB-002
DATE BEGAN: 06/10/09
DATE FINISHED: 06/10/09
INSPECTOR: B.Senna/J.Bacchus
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610DT
SAMPLING TOOL: 4-ft macrocore
COMPLETION DEPTH: 12 ft bgs
GW DEPTH: 8 ft bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	R-1	N/A	3.5		0.0 - 0.5' FILL: Dark brown f-c sand, fine gravel and clinker	N/A	PID malfunctioned due to rain; all samples held for contingency
	1.0					0.5 - 1.0' FILL: Gray f-c sand and crushed concrete		
	2.0					1.0 - 3.5' FILL: Dark brown/black/grayish brown f-c sand, some fine gravel, clinker and ash		153-SB-002-0002 collected from 1.5-2.0' bgs @ 09:05
	3.0							153-SB-002-0204 collected from 3.0-3.5' bgs @ 09:10
	4.0	R-2	N/A	3.5		3.5 - 4.0' No recovery	N/A	
	5.0					4.0 - 4.5' FILL: Grayish brown f-c sand and clinker		153-SB-002-0406 collected from 4.5-5.0' bgs @ 09:15
	6.0					4.5 - 5.3' FILL: Brown f-m sand		
	7.0					5.3 - 6.0' FILL: Light brown f-c sand and shells; moist		153-SB-002-0608 collected from 7.0-7.5' bgs @ 09:20
	8.0	R-3	N/A	3.5		6.0 - 6.3' OL: Very dark brown (10YR 2/2) silty clay, some organic material; moist	N/A	
	9.0					6.3 - 7.5' SC: Dark grayish brown (10YR 4/2) clayey sand, trace organic material		153-SB-002-0810 collected from 9.0-9.5' bgs @ 09:25
	10.0					7.5 - 8.0' No recovery		
	11.0					8.0 - 8.5' SM: Brown (7.5YR 4/3) silty sand, wet		153-SB-002-1012 collected from 11.0-11.5' bgs @ 09:30
	12.0					8.5 - 9.0' SW: Brown (7.5YR 4/3) f-c sand, trace f-m gravel and silt; wet		
						9.0 - 11.5' SP: Reddish brown (5YR 4/4) f-m sand, trace silt; wet		
						11.5 - 12.0' No recovery; end of boring at 12.0'		

PREPARED BY: JB
CHECKED BY: BS

Honeywell SA-5; Site 153

SITE INFO: Langer Transport
PROJECT NO: 3480050164
BORING ID: 153-SB-003
DATE BEGAN: 06/10/09
DATE FINISHED: 06/10/09
INSPECTOR: B.Senna/J.Bacchus
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610DT
SAMPLING TOOL: 4-ft macrocore
COMPLETION DEPTH: 12 ft bgs
GW DEPTH: 9 ft bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	R-1	N/A	3.0		0.0 - 0.5' FILL: Dark brown f-c sand and fine gravel	N/A	PID malfunctioned due to rain; drilled through asphalt before sampling
	1.0					0.5 - 1.0' FILL: Light brown f-m sand, trace medium gravel		153-SB-003-0002 collected from 1.0-1.5' bgs @ 09:40
	2.0					1.0 - 3.0' FILL: Dark grayish brown/reddish brown f-c sand; some f-m gravel, clinker and clay; tracebrick and ash		153-SB-003-0204 collected from 2.5-3.0' bgs @ 09:45
	3.0					3.0 - 4.0' No recovery		
	4.0	R-2	N/A	3.0		4.0 - 4.5' FILL: Reddish brown f-m sand and silt, trace brick	N/A	153-SB-003-0406 collected from 4.0-4.5' bgs @ 09:50
	5.0					4.5 - 6.5' FILL: Dark yellowish brown/brown f-c sand; some fine shells, gravel and clinker; trace ash and coal; moist		
	6.0					6.5 - 7.0' OL: Very dark grayish brown (10YR 3/2) silty clay, trace organic material; stiff, moist		153-SB-003-0608 collected from 6.0-6.5' bgs @ 09:55
	7.0					7.0 - 8.0' No recovery		
	8.0	R-3	N/A	3.5		8.0 - 9.0' OL: Very dark grayish brown (10YR 3/2) silty clay, trace organic material; stiff, moist	N/A	
	9.0					9.0 - 11.5' SW: Brown (7.5YR 4/3) f-m sand, some silt and fine gravel; one 1" gravel; wet		153-SB-003-0810 collected from 9.0-9.5' bgs @ 10:00
	10.0							
	11.0							153-SB-003-1012 collected from 11.0-11.5' bgs @ 10:05
	12.0					11.5 - 12.0' No recovery; end of boring at 12.0'		

PREPARED BY: JB
CHECKED BY: BS

Honeywell SA-5; Site 153

SITE INFO: Langer Transport
PROJECT NO: 3480050164
BORING ID: 153-SB-004
DATE BEGAN: 06/10/09
DATE FINISHED: 06/10/09
INSPECTOR: B.Senna/J.Bacchus
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610DT
SAMPLING TOOL: 4-ft macrocore
COMPLETION DEPTH: 12 ft bgs
GW DEPTH: 8 ft bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	R-1	N/A	3.5		0.0 - 0.3' FILL: Dark brown f-c sand and fine gravel	N/A	PID malfunctioned due to rain; drilled through asphalt before sampling. All samples held for contingency
	1.0					0.3 - 1.3' FILL: Light brown f-c sand, some fine gravel		153-SB-004-0002 collected from 1.5-2.0' bgs @ 10:15
	2.0					1.3 - 3.5' FILL: Black/brown f-c sand, some fine gravel, trace coal and clinker; concrete from 2.8-3.0'		
	3.0							153-SB-004-0204 collected from 3.0-3.5' bgs @ 10:20
						3.5 - 4.0' No recovery		
	4.0	R-2	N/A	3.5		4.0 - 4.5' FILL: Brown/grayish brown f-c sand, some glass and fine gravel	N/A	
	5.0					4.5 - 6.0' FILL: Light brown f-c sand and shells, trace gravel and glass		153-SB-004-0406 collected from 5.0-5.5' bgs @ 10:25
	6.0					6.0 - 7.5' OL: Very dark grayish brown (10YR 3/2) clayey silt, trace organic material and fine sand; moist		153-SB-004-0608 collected from 6.0-6.5' bgs @ 10:30
	7.0							
						7.5 - 8.0' No recovery		
	8.0	R-3	N/A	4.0		8.0 - 8.3' OL: Very dark grayish brown (10YR 3/2) clayey silt, trace organic material and fine sand; wet	N/A	153-SB-004-0810 collected from 8.5-9.0' bgs @ 10:35
	9.0					8.3 - 12.0' SW: Brown (7.5YR 4/2 to 4/4) f-c sand, some fine gravel, trace silt; wet; end of boring at 12.0'		
	10.0							
	11.0							153-SB-004-1012 collected from 11.5-12.0' bgs @ 10:40
	12.0							

PREPARED BY: JB
CHECKED BY: BS

Honeywell SA-5; Site 153

SITE INFO: Langer Transport
PROJECT NO: 3480050164
BORING ID: 153-SB-005
DATE BEGAN: 06/10/09
DATE FINISHED: 06/10/09
INSPECTOR: B.Senna/J.Bacchus
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610DT
SAMPLING TOOL: 4-ft macrocore
COMPLETION DEPTH: 16 ft bgs
GW DEPTH: 8 ft bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	R-1	N/A	3.0		0.0 - 0.3' FILL: Dark brown/brown f-c sand and fine gravel	0.0	Drilled through asphalt before sampling
	1.0					0.3 - 1.5' FILL: Light brown f-c sand, trace fine gravel		
	2.0					1.5 - 2.0' FILL: Dark brown f-c sand, some fine gravel and clinker		153-SB-005-0002 collected from 1.5-2.0' bgs @ 11:00
						2.0 - 2.3' FILL: Crushed concrete and fine white gravel		153-SB-005-0204 collected from 2.5-3.0' bgs @ 11:05
	3.0					2.3 - 3.0' FILL: Dark brown/black/gray f-c sand, some fine gravel and shells, trace ash and cinder		
	4.0	R-2	N/A	2.5		3.0 - 4.0' No recovery	0.0	
	5.0					4.0 - 6.5' FILL: Dark brown/dark yellowish brown/gray f-c sand, some fine gravel and shells, trace coal, ash and cinder; moist		153-SB-005-0406 collected from 4.5-5.0' bgs @ 11:10
	6.0							153-SB-005-0608 collected from 6.0-6.5' bgs @ 11:15
	7.0					6.5 - 8.0' No recovery		
	8.0	R-3	N/A	3.0		8.0 - 8.5' FILL: Brown/gray f-c sand, some fine gravel and shells, trace coal, ash and cinder; wet	0.0	153-SB-005-0810 collected from 8.0-8.5' bgs @ 11:20
	9.0					8.5 - 9.5' OL: Dark grayish brown (2.5Y 4/2) clay, trace-some organic material; very firm		
	10.0					9.5 - 10.3' PT: V dark brown (10YR 2/2) peat		
	11.0					10.3 - 11.0' SM: Yellowish brown (10YR 5/4) silty sand, trace organic material; wet		153-SB-005-1012 collected from 10.5-11.0' bgs @ 11:25
						11.0 - 12.0' No recovery		

PREPARED BY: JB
CHECKED BY: BS

Honeywell SA-5; Site 153

SITE INFO: Langer Transport
PROJECT NO: 3480050164
BORING ID: 153-SB-005

DATE BEGAN: 06/10/09
DATE FINISHED: 06/10/09
INSPECTOR: B.Senna/J.Bacchus

DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610DT

SAMPLING TOOL: 4-ft macrocore
COMPLETION DEPTH: 16 ft bgs
GW DEPTH: 8 ft bgs

DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	12.0	R-4	N/A	3.5		12.0 - 13.3' SW: Brown (7.5YR 4/2 to 4/4) f-c sand, some fine gravel, trace silt; wet	0.0	153-SB-005-1214 collected from 12.5-13.0' bgs @ 11:30; held for contingency
	13.0					13.3 - 15.0' SC: Reddish brown (5YR 4/4) clayey sand, trace fine gravel; very firm		
	14.0							
	15.0					15.0 - 15.5' SW: Reddish brown (5YR 4/2 to 4/4) f-c sand, trace silt; wet		153-SB-005-1416 collected from 15.0-15.5' bgs @ 11:35; held for contingency
						15.5 - 16.0' No recovery; end at 16.0'		
	16.0							

PREPARED BY: JB
CHECKED BY: BS

Honeywell SA-5; Site 153

SITE INFO: Langer Transport
PROJECT NO: 3480050164
BORING ID: 153-SB-006
DATE BEGAN: 06/10/09
DATE FINISHED: 06/10/09
INSPECTOR: B.Senna/J.Bacchus
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610DT
SAMPLING TOOL: 4-ft macrocore
COMPLETION DEPTH: 12 ft bgs
GW DEPTH: 9 ft bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	R-1	N/A	3.0		0.0 - 0.3' FILL: Dark brown f-c sand and fine gravel	0.0	All samples held for contingency
	1.0					0.3 - 1.0' FILL: Light brown f-m sand		
	2.0					1.0 - 3.0' FILL: Dark brown/dark yellowish brown f-c sand and f-m gravel; some shells and trace wood from 2.0'		153-SB-006-0002 collected from 1.5-2.0' bgs @ 11:45
	3.0							153-SB-006-0204 collected from 2.5-3.0' bgs @ 11:50
						3.0 - 4.0' No recovery		
	4.0	R-2	N/A	2.5		4.0 - 4.5' FILL: Dark brown/dark yellowish brown f-c sand and f-m gravel, some shells	0.0	
	5.0					4.5 - 6.5' FILL: Brown f-m sand		153-SB-006-0406 collected from 4.5-5.0' bgs @ 11:55
	6.0							153-SB-006-0608 collected from 6.0-6.5' bgs @ 12:00
						6.5 - 8.0' No recovery		
	7.0							
	8.0	R-3	N/A	2.0		8.0 - 8.3' FILL: Dark gray f-c sand, some fine gravel, coal and shells	0.0	
						8.3 - 9.0' SW: Dark gray clay, some fine gravel, shells, organic material and coal		153-SB-006-0810 collected from 8.5-9.0' bgs @ 12:05
▽	9.0					9.0 - 10.0' PT: Dark grayish brown (2.5Y 4/2) to very dark brown (10YR 2/2) peat		
	10.0							
						10.0 - 12.0' No recovery; end of boring at 12.0'		
	11.0							
	12.0							

PREPARED BY: JB
CHECKED BY: BS

Honeywell SA-5; Site 153

SITE INFO: Langer Transport
PROJECT NO: 3480050164
BORING ID: 153-SB-007
DATE BEGAN: 06/10/09
DATE FINISHED: 06/10/09
INSPECTOR: B.Senna/J.Bacchus
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610DT
SAMPLING TOOL: 4-ft macrocore
COMPLETION DEPTH: 14 ft bgs
GW DEPTH: 8 ft bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	R-1	N/A	3.5		0.0 - 1.0' FILL: Dark brown f-c sand, some silt and fine gravel	0.0	
	1.0					1.0 - 1.8' FILL: Light brown f-c sand, trace fine gravel		153-SB-007-0002 collected from 1.0-1.5' bgs @ 12:55
	2.0					1.8 - 3.3' FILL: Dark grayish brown f-c sand, some silt and fine gravel; trace clinker, coal, and brick; moist		
	3.0					3.3 - 3.5' FILL: Reddish brown f-m sand, some silt, trace medium gravel		153-SB-007-0204 collected from 3.0-3.5' bgs @ 13:00
	4.0	R-2	N/A	2.5		3.5 - 4.0' No recovery	0.0	153-SB-007-0406 collected from 4.0-4.5' bgs @ 13:05
	5.0					4.0 - 6.5' FILL: Brown/gray f-c sand, some f-m gravel; trace ceramics, coal, silt, and glass		
	6.0							153-SB-007-0608 collected from 6.0-6.5' bgs @ 13:10
	7.0					6.5 - 8.0' No recovery		
	8.0	R-3	N/A	2.5		8.0 - 8.5' FILL: Brown/gray f-c sand, some f-m gravel; trace ceramics, coal, silt, and glass; wet	0.0	153-SB-007-0810 collected from 8.0-8.5' bgs @ 13:15
	9.0					8.5 - 9.0' OH: Dark grayish brown (2.5Y 4/2) silty clay, some organic material		
	10.0					9.0 - 10.5' PT: Very dark brown (10YR 2/2) peat		153-SB-007-1012 collected from 10.0-10.5' bgs @ 13:20; DUP @ 13:22
	11.0					10.5 - 14.0' No recovery; end of boring at 14.0'		
	12.0	R-4	N/A	0.0			N/A	
	13.0							
	14.0							

PREPARED BY: JB
CHECKED BY: BS

Honeywell SA-5; Site 153

SITE INFO: Langer Transport
PROJECT NO: 3480050164
BORING ID: 153-SB-008
DATE BEGAN: 06/10/09
DATE FINISHED: 06/10/09
INSPECTOR: B.Senna/J.Bacchus
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610DT
SAMPLING TOOL: 4-ft macrocore
COMPLETION DEPTH: 12 ft bgs
GW DEPTH: 8 ft bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	R-1	N/A	4.0		0.0 - 3.3' FILL: Dark brown f-c sand, some f-m gravel and concrete; trace clinker, silt, brick, glass, and asphalt	0.0	All samples held for contingency
	1.0							153-SB-008-0002 collected from 1.5-2.0' bgs @ 13:30
	2.0							
	3.0					3.3 - 3.5' FILL: Reddish brown f-m sand and gravel, trace silt		
	4.0	R-2	N/A	3.0		3.5 - 5.5' FILL: Brown/gray/white f-c sand; some ceramics, coal, and gravel; trace brick, trace wood from 3.5-4.0'	0.0	153-SB-008-0204 collected from 3.5-4.0' bgs @ 13:35
	5.0							153-SB-008-0406 collected from 4.5-5.0' bgs @ 13:40
	6.0					5.5 - 7.0' FILL: Black/brown f-c sand; some clinker, cinders, and coal; trace glass and gravel		
	7.0							153-SB-008-0608 collected from 6.5-7.0' bgs @ 13:45
	8.0	R-3	N/A	3.0		7.0 - 8.0' No recovery	0.0	
	9.0					8.0 - 9.5' FILL: Brown/gray f-m gravel and f-c sand, some clinker, trace ceramics and coal; wet		153-SB-008-0810 collected from 8.5-9.0' bgs @ 13:50
	10.0					9.5 - 11.0' PT: Dark grayish brown (2.5Y 4/2) peat		
	11.0							153-SB-008-1012 collected from 10.5-11.0' bgs @ 13:55
	12.0					11.0 - 12.0' No recovery; end of boring at 12.0'		

PREPARED BY: JB
CHECKED BY: BS

Honeywell SA-5; Site 153

SITE INFO: Langer Transport
PROJECT NO: 3480050164
BORING ID: 153-SB-009
DATE BEGAN: 06/10/09
DATE FINISHED: 06/10/09
INSPECTOR: B.Senna/J.Bacchus
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610DT
SAMPLING TOOL: 4-ft macrocore
COMPLETION DEPTH: 16 ft bgs
GW DEPTH: 8 ft bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	R-1	N/A	3.5		0.0 - 0.8' FILL: Dark brown/brown f-c sand and fine gravel, trace silt	0.0	153-SB-009-0002 collected from 0.5-1.0' bgs @ 14:05
	1.0					0.8 - 1.5' FILL: Light brown f-m sand		
	2.0					1.5 - 3.5' FILL: Dark brown f-c sand, some f-m gravel, trace brick and clinker; brick at 3.4'		153-SB-009-0204 collected from 3.0-3.5' bgs @ 14:10
	3.0							
	4.0					3.5 - 4.0' No recovery		
		R-2	N/A	3.5		4.0 - 4.5' FILL: Brick and brown f-c sand	0.0	
	5.0					4.5 - 6.0' FILL: Dark brown f-c sand; some silt, fine gravel and clinker; trace coal and ceramics		153-SB-009-0406 collected from 4.5-5.0' bgs @ 14:15
	6.0					6.0 - 6.5' FILL: Crushed brick		
	7.0					6.5 - 7.5' FILL: Brown/black f-c sand, some f-m clinker and gravel		153-SB-009-0608 collected from 6.5-7.0' bgs @ 14:20
						7.5 - 8.0' No recovery		
	8.0	R-3	N/A	3.0		8.0 - 10.0' FILL: Brown/black f-c sand, some f-m clinker and gravel, trace coal; wood from 9.75'; wet	0.0	153-SB-009-0810 collected from 8.5-9.0' bgs @ 14:25; DUP @ 14:27
	9.0							
	10.0					10.0 - 10.5' OH: Dark grayish brown (2.5Y		153-SB-009-1012 collected

PREPARED BY: JB
CHECKED BY: BS

Honeywell SA-5; Site 153

SITE INFO: Langer Transport
PROJECT NO: 3480050164
BORING ID: 153-SB-009
DATE BEGAN: 06/10/09
DATE FINISHED: 06/10/09
INSPECTOR: B.Senna/J.Bacchus
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610DT
SAMPLING TOOL: 4-ft macrocore
COMPLETION DEPTH: 16 ft bgs
GW DEPTH: 8 ft bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
						4/2) clay, some organic material; wet		from 10.0-10.5' bgs @ 14:30
	11.0					10.5 - 11.0' PT: Very dark brown (10YR 2/2) peat		
						11.0 - 12.0' No recovery		
	12.0	R-4	N/A	3.5		12.0 - 13.5' PT: Very dark brown (10YR 2/2) peat	0.0	
	13.0							153-SB-009-1214 collected from 12.5-13.0' bgs @ 14:35
	14.0					13.5 - 15.0' SM: Gray (10YR 5/1) silty sand, trace clay from 13.5-13.7'; wet		
	15.0					15.0 - 15.5' SW: Gray (10YR 5/1) f-c sand, some silt, trace fine gravel; wet		
						15.5 - 16.0' No recovery; end of boring at 16.0'		
	16.0							

PREPARED BY: JB
CHECKED BY: BS

Honeywell SA-5; Site 153

SITE INFO: Langer Transport
PROJECT NO: 3480050164
BORING ID: 153-SB-010
DATE BEGAN: 06/10/09
DATE FINISHED: 06/10/09
INSPECTOR: B.Senna/J.Bacchus
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610DT
SAMPLING TOOL: 4-ft macrocore
COMPLETION DEPTH: 12 ft bgs
GW DEPTH: 8 ft bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	R-1	N/A	3.5		0.0 - 1.3' FILL: Dark brown f-c sand, some f-m gravel, trace silt	0.0	All samples held for contingency 153-SB-010-0002 collected from 0.5-1.0' bgs @ 14:40
	1.0					1.3 - 2.0' FILL: Dark yellowish brown f-m sand	0.0	
	2.0					2.0 - 3.5' FILL: Dark brown/gray f-c sand; some clinker and fine gravel; brick at 3.3'	0.0	153-SB-010-0204 collected from 2.5-3.0' bgs @ 14:45
	3.0						0.0	
	3.5					3.5 - 4.0' No recovery	37.6	
	4.0	R-2	N/A	3.5		4.0 - 7.5' FILL: Dark brown/gray f-c sand; some clinker and fine gravel; black plastic from 7.2-7.4'	6.9	153-SB-010-0406 collected from 4.5-5.0' bgs @ 14:50
	5.0						20.8	
	6.0						10.0	153-SB-010-0608 collected from 6.5-7.0' bgs @ 14:55
	7.0						0.0	
	7.5					7.5 - 8.0' No recovery		
	8.0	R-3	N/A	2.5		8.0 - 10.0' FILL: Dark brown/gray f-c sand; some clinker and fine gravel, trace brick	0.0	153-SB-010-0810 collected from 8.5-9.0' bgs @ 15:00
	9.0						0.0	
	10.0					10.0 - 10.5' PT: Dark grayish brown (2.5Y 4/2) peat	0.0	153-SB-010-1012 collected from 10.0-10.5' bgs @ 15:05
	10.5					10.5 - 12.0' No recovery; end of boring at 12.0'		
	11.0							
	12.0							

PREPARED BY: JB
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-011
DATE BEGAN: 3/16/10
DATE FINISHED: 3/16/10
INSPECTOR: J. Bacchus
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 20 ft bgs
GW DEPTH: 4.0 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.5		0.0 - 0.5' ASPHALT	0	Augered through asphalt
	1.0					0.5 - 1.0' FILL: Brown fine to coarse sand and fine to medium gravel; loose, dry		Sample collected 153-SB-011-0002 from 1.0-1.5' bgs @1040
	2.0					1.0 - 3.5' FILL: Black fine to coarse sand and fine clinker,some fine gravel, trace silt; brown from 2.5-3.1' bgs; trace yellow granular COPR material at 2.5' bgs; dense, moist from 3.3' bgs		Sample collected 153-SB-011-0204 from 2.5-3.0' bgs @1045
	3.0							
	4.0					3.5 - 4.0' No recovery		
		S-2	NA	2.8		4.0 - 6.8' FILL: Black fine to medium clinker and fine to coarse sand, some fine gravel, trace silt; loose, wet	0	Sample collected 153-SB-011-0406 from 4.5-5.0' bgs @1050
	5.0							
	6.0							Sample collected 153-SB-011-0608 from 6.0-6.5' bgs @1055, DUP @1100
	7.0					6.8 - 8.0' No recovery		
	8.0	S-3	NA	3.5		8.0 - 10.0' FILL: Black fine to medium clinker and fine to coarse sand, some fine gravel, trace silt; loose, wet	0	
	9.0							Sample collected 153-SB-011-0810 from 9.0-9.5' bgs @1105
	10.0					10.0 - 10.2' SM: Dark grayish brown silty sand, trace organic material; medium density, wet		
	11.0					10.2 - 11.5' CL: Black silty clay, trace fine sand; soft, wet		Sample collected 153-SB-011-1012 from 10.5-11.0' bgs @1110
						11.5 - 12.0' No recovery		
	12.0	S-4	NA	3.8		12.0 - 12.5' SP: Brown fine to medium sand, trace silt; loose, wet	0	Sample collected 153-SB-011-1214 from 12.0-12.5' bgs @1115
	13.0					12.5 - 15.8' SM: Reddish brown silty fine sand; medium density, wet		

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-011
DATE BEGAN: 3/16/10
DATE FINISHED: 3/16/10
INSPECTOR: J. Bacchus
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 20 ft bgs
GW DEPTH: 4.0 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	14.0	S-5	NA	3		15.8 - 16.0' No recovery	0	Sample collected 153-SB-011-1416 from 15.0-15.5' bgs @1120
	15.0					16.0 - 16.3' SM: Reddish brown silty fine sand, trace fine gravel; loose, wet		
	16.0					16.3 - 19.0' SC: Reddish brown clayey fine sand, some silt, trace fine gravel; loose, wet		Sample collected 153-SB-011-1618 from 16.5-17.0' bgs @1125; Hold
	17.0							
	18.0							Sample collected 153-SB-011-1820 from 18.5-19.0' bgs @1130; Hold
	19.0					19.0 - 20.0' No recovery; end of boring at 16' bgs		
	20.0							

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-012/153-TWP-003
DATE BEGAN: 3/16/10
DATE FINISHED: 3/16/10
INSPECTOR: J. Bacchus
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 20 ft bgs
GW DEPTH: 4.0 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.0		0.0 - 0.5' ASPHALT	0	
	1.0					0.5 - 1.0' FILL: Brown fine to coarse sand and fine to medium gravel; loose, dry		Sample collected 153-SB-012-0002 from 1.0-1.5' bgs @1210
	2.0					1.0 - 3.0' FILL: Black fine to coarse sand and fine clinker; ash from 1.8-2.2' bgs, some yellowish brown granular COPR material from 2.5-2.7' bgs; moist from 2.8' bgs		Sample collected 153-SB-012-0204 from 2.5-3.0' bgs @1215
	3.0					3.0 - 4.0' No recovery		
▽	4.0	S-2	NA	3.0		4.0 - 7.0' FILL: Fine to coarse black sand and fine clinker, trace fine gravel and silt; loose, wet	0	Sample collected 153-SB-012-0406 from 4.5-5.0' bgs @1220
	5.0							Sample collected 153-SB-012-0608 from 6.0-6.5' bgs @1225
	6.0							
	7.0					7.0 - 8.0' No recovery		Sample collected 153-SB-012-0810 from 8.5-9.0' bgs @1230
	8.0	S-3	NA	3.0		8.0 - 10.0' FILL: Black fine to coarse sand and fine clinker, trace fine gravel and silt, some fine brick; loose, wet	0	Sample collected 153-SB-012-1012 from 10.5-11.0' bgs @1235
	9.0							
	10.0					10.0 - 11.0' CL: Black silty clay, trace fine sand; soft, wet		Sample collected 153-SB-012-1214 from 13.5-14.0' bgs @1240
	11.0					11.0 - 12.0' No recovery		
	12.0	S-4	NA	2.5		12.0 - 12.2' CL: Black silty clay, trace fine sand; soft, wet	0	Sample collected 153-SB-012-1416 from 14.0-14.5' bgs @1245
	13.0					12.2 - 13.0' SP: Brown fine to medium sand, trace silt; medium density, wet		
						13.0 - 14.5' SM: Reddish brown silty fine		

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-012/153-TWP-003
DATE BEGAN: 3/16/10
DATE FINISHED: 3/16/10
INSPECTOR: J. Bacchus
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 20 ft bgs
GW DEPTH: 4.0 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	14.0	S-5	NA	3.0		sand, some gray silty COPR material from 13.5-13.8' bgs; medium density, wet	0	Sample collected 153-SB-012-1618 from 16.5-17' bgs @1250
	15.0					14.5 - 16.0' No recovery		Sample collected 153-SB-012-1820 from 18.5-19.0' bgs @1255
	16.0					16.0 - 19.0' SM: Reddish brown silty fine sand; loose, wet		Boring converted to 153-TWP-003 using 1" diameter 0.010, slot PVC; screened 2-12'
	17.0							
	18.0							DTW= 3.53' bgs, grab sample collected @13:15
	19.0					19.0 - 20.0' No recovery; end of boring @20' bgs		
	20.0							

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-013
DATE BEGAN: 3/15/10
DATE FINISHED: 3/15/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 5400
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 16 ft bgs
GW DEPTH: 4.0 ft bgs
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.0		0.0 - 0.8' ASPHALT	0	Sample collected 153-SB-013-0002 from 1.0-1.5' bgs @1130
	1.0					0.8 - 2.5' FILL: Black silty sand with gravel, coal, and clinker		
	2.0					2.5 - 2.8' FILL: Brown/black fine silty sand with some maroon nodules		Sample collected 153-SB-013-0204 from 2.0-2.5' bgs @1135
	3.0					2.8 - 3.0' FILL: Concrete chunk in tip stained green/yellow		
						3.0 - 4.0' No recovery		
	4.0	S-2	NA	3.0		4.0 - 7.0' FILL: Dark brown loose gravel, brick, clinker, glass, and coal; saturated	0	Sample collected 153-SB-013-0406 from 4.5-5.0' bgs @1140
	5.0							
	6.0							Sample collected 153-SB-013-0608 from 6.5-7.0' bgs @1145
	7.0					7.0 - 8.0' No recovery		
	8.0	S-3	NA	2.5		8.0 - 10.3' FILL: Fine to coarse gravel with shells; loose, wet	0	Sample collected 153-SB-013-0810 from 9.0-9.5' bgs @1150
	9.0							
	10.0					10.3 - 10.5' ML: Black clayey silt with light green tint; wet		
						10.5 - 12.0' No recovery		Sample collected 153-SB-013-1012 from 10.0-10.5' bgs @1155
	11.0							

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-013
DATE BEGAN: 3/15/10
DATE FINISHED: 3/15/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 5400
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 16 ft bgs
GW DEPTH: 4.0 ft bgs
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	12.0	S-4	NA	3.5		12.0 - 13.8' ML: Black clayey silt with lenses of fine to medium sand	0	Sample collected 153-SB-013-1214 from 12.5-13.0' bgs @1200, DUP @1202
	13.0					13.8 - 14.0' ML: Black clayey silt with lenses of fine to medium sand and organic material; organic odor		
	14.0					14.0 - 15.5' ML: Light brown silt with fine to coarse gravel		
	15.0					15.5 - 16.0' No recovery; end of boring @16' bgs		Sample collected 153-SB-013-1416 from 15.0-15.5' bgs @1205
	16.0							

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153 | **PROJECT NO:** 3480050164 | **BORING ID:** 153-SB-014

DATE BEGAN: 3/15/10 | **DATE FINISHED:** 3/15/10 | **INSPECTOR:** B. Senna/ J. Bacchus

DRILLING CO: B & B Drilling | **DRILLING METHOD:** Direct Push | **DRILL EQUIP:** Geoprobe 5400/ 6610DT

SAMPLING TOOL: Macrocore | **COMPLETION DEPTH:** 16 ft bgs | **GW DEPTH:** 4.0 ft bgs

DRILLER: Ed Blewitt | **NORTH:** | **EAST:**

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.0		0.0 - 0.8' ASPHALT: Gravel	0	Sample collected 153-SB-014-0002 from 1.0-1.5' bgs @1015
	1.0					0.8 - 3.0' FILL: Dark brown silty fine sand with brick, clinker, gravel		
	2.0							Sample collected 153-SB-014-0204 from 2.0-2.5' bgs @1020
	3.0					3.0 - 4.0' No recovery		
	4.0	S-2	NA	3.0		4.0 - 5.5' FILL: Dark brown silty fine sand with brick, clinker, gravel; wet	0	
	5.0							Sample collected 153-SB-014-0406 from 5.0-5.5' bgs @1025
	6.0					5.5 - 7.0' FILL: Fine light gray/dark brown/black silty sand with gravel, clinker, shells, (Maroon nodules, possible COPR material); wet		
	7.0					7.0 - 8.0' No recovery		Sample collected 153-SB-014-0608 from 6.5-7.0' bgs @1030
	8.0	S-3	NA	3.0		8.0 - 11.0' FILL: Gray/dark brown silty sand with yellow glue-like substance throughout; wet (Tight from 9-11' bgs)	0	
	9.0							Sample collected 153-SB-014-0810 from 8.5-9.0' bgs @1035
	10.0							Sample collected 153-SB-014-1012 from 10.5-11.0' bgs @1040
	11.0					11.0 - 12.0' No recovery		
	12.0	S-4	NA	4.0		12.0 - 14.0' OL: Black silty clay, trace fine sand and organic material; very soft, wet	0	Refusal at 12' bgs, continue with 6610DT rig
	13.0							Sample collected 153-SB-014-1214 from 12.0-12.5' bgs @1350; HOLD
	14.0					14.0 - 14.2' SM: Grayish brown silty fine to medium sand with trace organic material; loose, wet		
	15.0					14.2 - 16.0' SP: Reddish brown fine sand with trace silt; medium density, wet; end of boring 16' bgs		Sample collected 153-SB-014-1416 from 15.5-16.0' bgs @1355; HOLD
	16.0							

PREPARED BY: MS

CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-015/153-TWP-002
DATE BEGAN: 3/16/10
DATE FINISHED: 3/16/10
INSPECTOR: J. Bacchus
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6615
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 28 ft bgs
GW DEPTH: 4.0 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	2.5		0.0 - 0.5' ASPHALT	0	Augered through asphalt
	1.0					0.5 - 0.8' FILL: Brown fine to medium sand and fine gravel; loose, dry		Sample collected 153-SB-015-0002 from 1.0-1.5' bgs @0800
	2.0					0.8 - 2.5' FILL: Black fine to coarse sand, fine clinker, trace gravel, and silt; loose, dry		
	3.0					2.5 - 4.0' No recovery		Sample collected 153-SB-015-0204 from 2.0-2.5' bgs @0805
	4.0	S-2	NA	3.0		4.0 - 7.0' FILL: Black fine to medium clinker, fine to coarse sand, fine to medium gravel and brick, trace coal and silt; loose, wet	0	Sample collected 153-SB-015-0406 from 4.0-4.5' bgs @0810
	5.0							
	6.0							Sample collected 153-SB-015-0608 from 6.5-7.0' bgs @0815
	7.0					7.0 - 8.0' No recovery		
	8.0	S-3	NA	4.0		8.0 - 12.0' FILL: Black/dark gray fine to coarse sand, fine to medium clinker, some fine to medium gravel, trace silt and coal; medium density, wet; trace yellowish brown granular COPR material from 10.0-12.0' bgs	0	Driller had difficulty getting the macrocore down the borehole for 8-12' bgs run
	9.0							
	10.0							Sample collected 153-SB-015-0810 from 9.0-9.5' bgs @0830
	11.0					12.0 - 12.2' FILL: Black/dark gray fine to coarse sand, fine to medium clinker, some fine to medium gravel, trace silt and coal; loose, wet		
	12.0	S-4	NA	4.0		12.2 - 15.8' CL: Dark grayish brown silty clay, trace fine to medium sand and gravel; soft, wet	0	Sample collected 153-SB-015-1012 from 11.0-11.5' bgs @0835
	13.0							
	14.0							

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-015/153-TWP-002
DATE BEGAN: 3/16/10
DATE FINISHED: 3/16/10
INSPECTOR: J. Bacchus
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6615
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 28 ft bgs
GW DEPTH: 4.0 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	15.0					15.8 - 16.0' SM: Reddish brown silty fine sand, trace fine gravel; medium density, wet		Sample collected 153-SB-015-1214 from 12.5-13.0' bgs @0845
	16.0	S-5	NA	4.0		16.0 - 20.0' SM: Reddish brown silty fine sand; medium density, wet	0	Sample collected 153-SB-015-1416 from 15.0-15.5' bgs @0850
	17.0							
	18.0							Sample collected 153-SB-015-1618 from 16.0-16.5' bgs @0855
	19.0							
	20.0	S-6	NA	4.0		20.0 - 22.0' ML: Reddish brown fine sandy silt, trace clay; trace fine gravel from 21.6-21.7' bgs; soft, wet	0	Sample collected 153-SB-015-1820 from 18.0-18.5' bgs @0900,DUP @0905
	21.0							Sample collected 153-SB-015-2022 from 20.5-21.0' bgs @0910
	22.0					22.0 - 23.7' SW: Reddish brown fine gravelly sand; medium density, wet		Sample collected 153-SB-015-2224 from 22.5-23.0' bgs @0915
	23.0					23.7 - 24.0' SM: Reddish brown silty fine sand; medium density, wet		Sample collected 153-SB-015-2426 from 24.5-25.0' bgs @0920; HOLD
	24.0	S-7	NA	4.0		24.0 - 28.0' SM: Reddish brown silty fine sand, trace clay from 25.6-26.0' bgs; loose, wet; end of boring 28' bgs	0	Boring converted to 153-TWP-002 using 1" diameter, 0.010 slot PVC; screened 2-12' bgs
	25.0							
	26.0							DTW= 4.27' bgs collected grab sample @1000
	27.0							
	28.0							

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-016
DATE BEGAN: 3/15/10
DATE FINISHED: 3/15/10
INSPECTOR: J. Bacchus
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 27 ft bgs
GW DEPTH: 4' bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	2.0		0.0 - 0.5' Asphalt	0	Augered through asphalt
	1.0					0.5 - 1.0' FILL: Brown fine to coarse sand, some fine gravel; loose, dry		Sample collected 153-SB-016-0002 from 1.0-1.5' bgs @1055 DUP @1100
	2.0	S-2	NA	2.0		1.0 - 2.0' FILL: Black fine to medium clinker and sand, trace fine gravel, brick, and silt; loose, dry	0	Stopped at 2.0' bgs due to brick; resumed at 2.0 ' bgs for S-2
	3.0					2.0 - 4.0' FILL: Black fine to medium clinker and sand, trace fine gravel, brick, and silt; moist from 3' bgs		Sample collected 153-SB-016-0204 from 2.5-3.0' bgs @1105 DUP @1110
▽	4.0	S-3	NA	2.8		4.0 - 5.5' FILL: Black fine to medium clinker and sand, trace fine gravel, brick, and silt; loose, wet	0	
	5.0							Sample collected 153-SB-016-0406 from 5.0-5.5' bgs @1115
	6.0					5.5 - 6.8' FILL: Dark gray fine clinker and brick, some fine to medium sand and coal; loose, wet		
	7.0					6.8 - 8.0' No recovery		Sample collected 153-SB-016-0608 from 6.0-6.5' bgs @1120
	8.0	S-4	NA	3.5		8.0 - 11.5' FILL: Dark brown/dark gray clinker and brick, some fine to medium sand and coal; trace sheen from 10.8-11.1' bgs; loose wet		
	9.0							Sample collected 153-SB-016-0810 from 8.0-8.5' bgs @ 1125
	10.0							
	11.0							Sample collected 153-SB-016-1012 from 10.5-11.0' bgs @1130
	12.0	S-5	NA	3.0		11.5 - 12.0' No recovery	0	
	13.0					12.0 - 14.0' FILL: Dark gray clinker and brick, some fine to medium sand and coal; loose, wet		Sample collected 153-SB-016-1214 from 12.0-12.5' bgs @1135
	14.0					14.0 - 15.0' ML: Dark grayish brown sandy		

PREPARED BY: MS
CHECKED BY: MWV

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-016
DATE BEGAN: 3/15/10
DATE FINISHED: 3/15/10
INSPECTOR: J. Bacchus
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 27 ft bgs
GW DEPTH: 4' bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	15.0					silt, trace clay, trace fine gravel		Sample collected 153-SB-016-1416 from 14.5-15.0' bgs @1140
						15.0 - 16.0' No recovery		
	16.0	S-6	NA	4.0		16.0 - 20.0' SM: Reddish brown fine silty sand; medium density, wet	0	Sample collected 153-SB-016-1618 from 16.5-17.0' bgs @1145
	17.0							
	18.0							Sample collected 153-SB-016-1820 from 18.5-19.0' bgs @1150
	19.0							
	20.0	S-7	NA	4.0		20.0 - 24.0' SM: Reddish brown fine silty sand; medium density, wet	0	Sample collected 153-SB-016-2022 from 20.5-21.0' bgs @1200
	21.0							
	22.0							Sample collected 153-SB-016-2224 from 23.5-24.0' bgs @1205
	23.0							
	24.0	S-8	NA	3.0		24.0 - 26.0' SM: Reddish brown fine silty sand; medium density, wet	0	Sample collected 153-SB-016-2426 from 25.0-25.5' bgs @1210
	25.0							
	26.0					26.0 - 27.0' SP: Reddish brown fine to medium sand; end of boring at 27' bgs		
	27.0							

PREPARED BY: MS
CHECKED BY: MWV

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-017
DATE BEGAN: 3/15/10
DATE FINISHED: 3/15/10
INSPECTOR: J. Bacchus
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 28 ft bgs
GW DEPTH: 4 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.0		0.0 - 0.5' ASPHALT	0	No PID due to rain; Augered through asphalt
	1.0					0.5 - 0.8' FILL: Brown fine to coarse sand, some fine gravel		
	2.0					0.8 - 3.5' FILL: Black fine to coarse sand and fine to medium clinker, some fine gravel, trace silt; loose, moist; from 3.0' bgs, trace brick in shoe		Collect 153-SB-042-0002 from 0.5-1.0' bgs @0935
	3.0							
	4.0	S-2	NA	3.0		3.5 - 4.0' No recovery	0	Collect 153-SB-042-0204 from 3.0-3.5' bgs @0940
	5.0					4.0 - 4.1' FILL: Brick; wet		
	6.0					4.1 - 7.0' FILL: Dark brown fine to coarse sand and brick, some fine clinker, coal and gravel; loose, wet; some sheen and odor from 6.8-7.0' bgs		Collect 153-SB-042-0406 from 4.0-4.5' bgs @0945
	7.0					7.0 - 8.0' No recovery		Collect 153-SB-042-0608 from 6.5-7.0' bgs @0950
	8.0	S-3	NA	2.5		8.0 - 10.5' FILL: Reddish brown fine to coarse sand and brick, some fine clinker, coal and gravel; loose, wet; no sheen, no odors	0	Collect 153-SB-042-0810 from 8.0-8.5' bgs @0955
	9.0							
	10.0							
	11.0					10.5 - 12.0' No recovery		Collect 153-SB-042-1012 from 10.0-10.5' bgs @1000
	12.0	S-4	NA	3.5		12.0 - 13.5' FILL: Dark gray fine gravel and brick, some fine to coarse sand and fine coal; loose, wet	0	
	13.0					13.5 - 14.3' SM: Grayish brown fine to medium silty sand; trace clay from 13.5-14.0' bgs; medium density, wet		Collect 153-SB-042-1214 from 13.5-14.0' bgs @1005
	14.0							

PREPARED BY: MS
CHECKED BY: MWV

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-017
DATE BEGAN: 3/15/10
DATE FINISHED: 3/15/10
INSPECTOR: J. Bacchus
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 28 ft bgs
GW DEPTH: 4 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	15.0					14.3 - 15.5' SP: Reddish brown fine sand, trace silt; medium density, wet		Collect 153-SB-042-1416 from 15.0-15.5' bgs @1010
						15.5 - 16.0' No recovery		
	16.0	S-5	NA	4.0		16.0 - 20.0' SM: Reddish brown silty fine sand, few clay lenses; medium density, wet	0	Collect 153-SB-042-1618 from 16.0-16.5' bgs @1015
	17.0							
	18.0							
	19.0							Collect 153-SB-042-1820 from 19.5-20.0' bgs @1020
	20.0	S-6	NA	3.0		20.0 - 23.0' SM: Reddish brown fine sand, silt; medium density, wet	0	Collect 153-SB-042-2022 from 20.0-20.5' bgs @ 1025
	21.0							
	22.0							Collect 153-SB-042-2224 from 22.5-23.0' bgs @1030
	23.0					23.0 - 24.0' No recovery		
	24.0	S-7	NA	4.0		24.0 - 28.0' SP: Reddish brown fine to medium sand; loose, wet; end of boring at 28' bgs	0	
	25.0							
	26.0							Collect 153-SB-042-2426 from 25.5-26.0' bgs @1035;HOLD
	27.0							
	28.0							

PREPARED BY: MS
CHECKED BY: MWV

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-018
DATE BEGAN: 3/15/10
DATE FINISHED: 3/15/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 5400
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 14 ft bgs
GW DEPTH: 4.5 ft bgs
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.0		0.0 - 0.5' ASPHALT		No PID, due to rain
	1.0					0.5 - 3.0' FILL: Black/ dark brown silty fine sand with gravel, clinker; moist from 2.5-3.0' bgs		Sample collected 153-SB-018-0002 from 1.0-1.5' bgs @0845
	2.0							Sample collected 153-SB-018-0204 from 2.5-3.0' bgs @0850
	3.0					3.0 - 4.0' No recovery		
	4.0	S-2	NA	3.5		4.0 - 4.5' FILL: Black/ dark brown silty fine sand with gravel, clinker; very moist		
	5.0					4.5 - 7.5' FILL: Dark brown/black silty fine sand with gravel, glass, clinker, shells; wet		Sample collected 153-SB-018-0406 from 4.5-5.0' bgs @0855
	6.0							
	7.0							Sample collected 153-SB-018-0608 from 7.0-7.5' bgs @0900
	8.0	S-3	NA	3.0		7.5 - 8.0' No recovery		
	9.0					8.0 - 10.0' FILL: Fine to medium gravel, shells; saturated, loose		Sample collected 153-SB-018-0810 from 8.5-9.0' bgs @0905
	10.0							
	11.0					10.0 - 11.0' FILL: Dark brown silty fine sand, fine to coarse gravel; shells		Sample collected 153-SB-018-1012 from 10.5-11.0' bgs @0910
	12.0	S-4	NA	2.0		11.0 - 12.0' No recovery		
	13.0					12.0 - 12.3' CL: Brown silt		
	14.0					12.3 - 14.0' CL: Black clayey silt; wet; end of boring at 14' bgs		Sample collected 153-SB-018-1214 from 12.5-13.0' bgs @0915

PREPARED BY: MS
CHECKED BY: MWV

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-019/153-TWP-001
DATE BEGAN: 3/15/10
DATE FINISHED: 3/15/10
INSPECTOR: J. Bacchus
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 16 ft bgs
GW DEPTH: 4 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.25		0.0 - 0.8' ASPHALT	0	Augered through asphalt
	1.0					0.8 - 1.0' FILL: Brown fine to medium sand, some gravel; loose, dry		
	2.0					1.0 - 4.0' FILL: Black fine to medium clinker, some fine gravel, trace concrete and brick; loose, moist from 3' bgs		Sample collected 153-SB-019-0002 from 1.0-1.5' bgs @0830
	3.0							Sample collected 153-SB-019-0204 from 3.0-3.5' bgs @0835
	4.0	S-2	NA	3.0		4.0 - 7.0' FILL: Dark brown fine brick, fine to coarse sand, some fine clinker and gravel; loose, wet	0	
	5.0							Sample collected 153-SB-019-0406 from 4.5-5.0' bgs @0840
	6.0							Sample collected 153-SB-019-0608 from 6.0-6.5' bgs @0845
	7.0					7.0 - 8.0' No recovery		
	8.0	S-3	NA	4.0		8.0 - 11.0' FILL: Dark brown fine brick and fine to course sand, some fine clinker and gravel; loose, wet	0	
	9.0							Sample collected 153-SB-019-0810 from 9.0-9.5' bgs @0850
	10.0							
	11.0					11.0 - 12.0' OL: Black silty clay; very soft, loose		Sample collected 153-SB-019-1012 from 11.5-12.0' bgs @0855
	12.0	S-4	NA	4.0		12.0 - 14.0' SM: Brown silty sand, trace clay lenses; medium density, wet	0	
	13.0							Sample collected 153-SB-019-1214 from 12.5-13.0' bgs @0900; HOLD
	14.0					14.0 - 16.0' SP: Reddish brown fine to medium sand, trace silt; loose, wet; end of boring at 16.0' bgs		Convert to 153-TWP-0001
	15.0							
	16.0							

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-020
DATE BEGAN: 3/15/10
DATE FINISHED: 3/15/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 5400
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 14 ft bgs
GW DEPTH: 4 ft bgs
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.0		0.0 - 0.8' ASPHALT: Gravel	0	
	1.0					0.8 - 3.0' FILL: Dark brown silty fine sand, clinker, coal, trace wood, gravel; very moist at 2.75' bgs		Sample collected 153-SB-020-0002 from 1.0-1.5' bgs @1430
	2.0							
	3.0					3.0 - 4.0' No recovery		Sample collected 153-SB-020-0204 from 2.5-3.0' bgs @1435
	4.0	S-2	NA	3.0		4.0 - 5.5' Fill: Brown/black fine to medium gravel, shells; wet	0	
	5.0							Sample collected 153-SB-020-0406 from 4.5-5.0' bgs @1440
	6.0					5.5 - 7.0' FILL: Light gray fine to medium gravel, many shells; wet		
	7.0					7.0 - 8.0' No recovery		Sample collected 153-SB-020-0608 from 6.5-7.0' bgs @1445
	8.0	S-3	NA	3.0		8.0 - 8.5' FILL: Light gray fine to medium gravel, many shells; wet	0	
	9.0					8.5 - 9.5' CL: Black clayey silt		Sample collected 153-SB-020-0810 from 8.5-9.0' bgs @1450
	10.0					9.5 - 10.0' SM: Fine brown sand, fine to medium gravel and silt		
	11.0					10.0 - 11.0' ML: Light brown silt, trace fine sand and lenses of red brown clayey silt		Sample collected 153-SB-020-1012 from 10.5-11.0' bgs @ 1455
	12.0	S-4	NA	1.0		11.0 - 12.0' No recovery	0	
	13.0					12.0 - 13.0' ML: Light brown silt, trace fine sand and lenses of red brown clayey silt		Sample collected 153-SB-020-1214 from 12.5-13.0' bgs @1500
	14.0					13.0 - 14.0' No recovery; end of boring at 14' bgs		

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-021
DATE BEGAN: 3/16/10
DATE FINISHED: 3/16/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 14 ft bgs
GW DEPTH: 4 ft bgs
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	4.0		0.0 - 1.0' ASPHALT	0	Soft dig to 5.0' bgs
	1.0					1.0 - 4.0' FILL: Dark brown/ black silty fine sand, coal, glass, clinker, and gravel		Sample collected 153-SB-021-0002 from 1.5-2.0' bgs @1115
	2.0							
	3.0							Sample collected 153-SB-021-0204 from 3.0-3.5' bgs @1120
	4.0	S-2	NA	3.25		4.0 - 4.8' FILL: Dark brown/ black silty fine sand, coal, glass, clinker, and gravel	0	
	5.0					4.8 - 6.8' FILL: Fine to coarse wet gravel, shells, and clinker		Sample collected 153-SB-021-0406 from 4.5-5.0' bgs @1345
	6.0							Sample collected 153-SB-021-0608 from 6.5-7.0' bgs @1350
	7.0					6.8 - 6.9' FILL: Wood 6.9 - 7.3' FILL: Dark brown silty fine sand, wood, gravel, and coal		
	8.0	S-3	NA	3.0		7.3 - 8.0' No recovery	0	Sample collected 153-SB-021-0810 from 8.5-9.0' bgs @1355, DUP @1357
	9.0					8.0 - 9.8' FILL: Black/dark brown fine to medium gravel, shells, and clinker; slight sheen		
	10.0					9.8 - 10.5' CL: Black clayey silt		
	11.0					10.5 - 11.0' ML: Light brown silt, fine to coarse sand		Sample collected 153-SB-021-1012 from 10.5-11.0' bgs @1400
	12.0	S-4	NA	.75		11.0 - 12.0' No recovery 12.0 - 12.8' CL: Red brown silt, lenses of fine to coarse sand and fine to medium gravel	0	Sample collected 153-SB-021-1214 from 12.0-12.5' bgs @1405
	13.0					12.8 - 14.0' No recovery; end of boring at 14' bgs		
	14.0							

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-022
DATE BEGAN: 3/12/10
DATE FINISHED: 3/12/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 14 ft bgs
GW DEPTH: 5.5 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0					0.0 - 4.0' No samples- Soft dig through, New clean fill; Fabric at 4' bgs		
	4.0	S-1	NA	2		4.0 - 6.0' FILL: Dark brown clayey silt with gravel; very moist; water at 5.5' bgs	0	Sample collected 153-SB-022-0406 from 4.5-5.0' bgs @1140
	5.0							Soft dig to 6' bgs
	6.0	S-2	NA	4		6.0 - 8.0' FILL: Light gray/beige clayey silt with trace white nodules, potential COPR material; wet	0	
	7.0					8.0 - 8.1' FILL: Roots, organic material		Sample collected 153-SB-022-0608 from 6.5-7.0' bgs @1235
	8.0					8.1 - 9.8' CL: Black clayey silt, organic odor; wet		
	9.0					9.8 - 10.0' SM: Light brown fine to medium sand, trace fine shells		Sample collected 153-SB-022-0810 from 9.0-9.5' bgs @1240
	10.0	S-3	NA	3.5		10.0 - 10.5' SM: Light brown fine to medium sand, trace fine shells	0	
	11.0					10.5 - 11.5' SM: Reddish brown/light brown fine sand, fine gravel, trace fine shells; wet		Sample collected 153-SB-022-1012 from 10.5-11.0 @1245; HOLD

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-022
DATE BEGAN: 3/12/10
DATE FINISHED: 3/12/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 14 ft bgs
GW DEPTH: 5.5 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	12.0					11.5 - 12.0' SM: Reddish brown fine sand, fine gravel, trace fine shells; wet		
	13.0					12.0 - 13.5' CL: Red brown silt, lenses of red brown clay; wet		Sample collected 153-SB-022-1214 from 12.5-13.0' bgs @1250; HOLD
	14.0					13.5 - 14.0' No recovery; end of boring at 14' bgs		

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-023
DATE BEGAN: 3/12/10
DATE FINISHED: 3/12/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 14 ft bgs
GW DEPTH: 5.5' bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0					0.0 - 4.0' No samples- Soft dig through clean fill; Fabric at 4' bgs		
	4.0	S-1	NA	3.5		4.0 - 5.8' FILL: Light brown/black/light yellow silty fine sand, gravel, coal, and glass; potential COPR material	0	Sample collected 153-SB-023-0406 from 5.0-5.5' bgs @1330
	5.0							
	6.0					5.8 - 6.5' FILL: Beige/light brown clayey silt with white nodules; wet; potential COPR		Sample collected 153-SB-023-0608 from 6.0-6.5' bgs @1335
	7.0					6.5 - 7.5' FILL: Very coarse silty sand with clinker, gravel, and shells		
	8.0	S-2	NA	3		7.5 - 8.0' No recovery	0	Sample collected 153-SB-023-0810 from 8.0-8.5' bgs @1340
	9.0					8.0 - 8.5' CL: Light gray/black clayey silt		
	10.0					8.5 - 11.0' CL: Black clayey silt with trace fine shells and lenses of fine to medium sand		Sample collected 153-SB-023-1012 from 10.5-11.0' bgs @1345, DUP @1347
	11.0					11.0 - 12.0' No recovery		
	12.0	S-3	NA	1.5		12.0 - 13.5' SP: Light brown fine to medium sand, fine gravel, trace shells	0	Sample collected 153-SB-023-1214 from 12.5-13.0' bgs @1350
	13.0					13.5 - 14.0' No recovery; end of boring at 14' bgs		
	14.0							

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-024
DATE BEGAN: 3/12/10
DATE FINISHED: 3/12/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610DT
SAMPLING TOOL: 4 ft Macrocore
COMPLETION DEPTH: 16 ft bgs
GW DEPTH: 6 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0					0.0 - 4.0' No samples- Soft dig through clean fill		
	1.0							
	2.0							
	3.0							
	4.0	S-1	NA	3		4.0 - 6.0' FILL: Dark brown silty sand with glass, gravel, shells, clinker, and coal; wet at 6'	0	Sample collected 153-SB-023-0406 from 4.0-4.5' bgs @1415
	5.0							
	6.0					6.0 - 7.0' FILL: Fine to coarse gravel with glass and brown silty sand		Sample collected 153-SB-024-0608 from 6.5-7.0' bgs @1420
	7.0					7.0 - 8.0' No Recovery		
	8.0	S-2	NA	3		8.0 - 8.5' OL: Black clayey silt	0	
	9.0					8.5 - 9.0' SM: Black to light brown fine sand		Sample collected 153-SB-024-0810 from 8.5-9.0' bgs @1425
	10.0					9.0 - 10.5' CL: Light brown silt with lenses of reddish brown clayey silt		
	11.0					10.5 - 11.0' CL: Reddish brown clayey silt with fine to coarse sand		Sample collected 153-SB-024-1012 from 10.5-12.0' bgs @1430
	12.0	S-3	NA	1		11.0 - 12.0' No Recovery	0	
	13.0					12.0 - 13.0' CL: Reddish brown clayey silt with fine to coarse sand		Sample collected 153-SB-024-1214 from 12.5-13.0' bgs @1435
	14.0					13.0 - 14.0' No Recovery; end of boring at 14'		
	15.0							
	16.0							

PREPARED BY: MWV
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-025
DATE BEGAN: 3/15/10
DATE FINISHED: 3/15/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610DT
SAMPLING TOOL: 4 ft Macrocore
COMPLETION DEPTH: 14 ft bgs
GW DEPTH: 5 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3		0.0 - 1.0' ASPHALT: Asphalt with some gravel	0	
	1.0					1.0 - 3.0' FILL: Black to dark brown silty sand, with coal, gravel, and glass		Sample collected 153-SB-025-0002 from 1.0-1.5' bgs @1335
	2.0							
	3.0					3.0 - 4.0' No Recovery		Sample collected 153-SB-025-0204 from 2.5-3.0' bgs @1340
	4.0	S-2	NA	3		4.0 - 6.5' FILL: Black to dark brown silty sand, with coal, gravel, and glass	0	
▽	5.0							Sample collected 153-SB-025-0406 from 4.5-5.0' bgs @1345
	6.0					6.5 - 7.0' FILL: Black to yellow brown silt with coal and rusted color gravel; dense		Sample collected 153-SB-025-0608 from 6.5-7.0' bgs @1350
	7.0					7.0 - 8.0' No Recovery		
	8.0	S-3	NA	2.75		8.0 - 9.5' FILL: Fine to coarse gravel, shells, clinker; very loose; saturated	0	
	9.0							Sample collected 153-SB-025-0810 from 9.0-9.5' bgs @1355
	10.0					9.5 - 10.0' OL: Black clayey silt 10.0 - 10.8' CL: Olive clayey silt with lenses of reddish brown fine to coarse sand		Sample collected 153-SB-025-1012 from 10.0-10.5' bgs @1400
	11.0					10.8 - 12.0' No Recovery		
	12.0	S-4	NA	2		12.0 - 13.0' GC: Light brown silt with fine to coarse sand and fine to medium gravel	0	
	13.0					13.0 - 14.0' GC: Reddish brown silt with lenses of fine to coarse sand and fine to medium gravel; end of boring at 14' bgs		Sample collected 153-SB-025-1214 from 12.5-13.0' bgs @1405
	14.0							
	15.0							
	16.0							

PREPARED BY: MWV
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-026
DATE BEGAN: 3/16/10
DATE FINISHED: 3/16/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610DT
SAMPLING TOOL: 4 ft Macrocore
COMPLETION DEPTH: 14 ft bgs
GW DEPTH: 7 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3		0.0 - 0.5' ASPHALT: Asphalt with gravel	0	
	1.0					0.5 - 3.0' FILL: Dark brown to black silty sand with coal, glass, and gravel		Sample collected 153-SB-026-0002 from 1.0-1.5' bgs @1000 also DUP at 1002
	2.0							
	3.0							Sample collected 153-SB-026-0204 from 2.5-3.0' bgs @1005
						3.0 - 4.0' No Recovery		
	4.0	S-2	NA	3		4.0 - 6.5' FILL: Dark brown to black silty sand with coal, glass, and gravel	0	Sample collected 153-SB-026-0406 from 4.0-4.5' bgs @1010
	5.0							
	6.0							
						6.5 - 7.0' FILL: Dark brown to rust colored silt with clinker, shells, and gravel; very moist		Sample collected 153-SB-026-0608 from 6.5-7.0' bgs @1015
	7.0							
						7.0 - 8.0' No Recovery		
	8.0	S-3	NA	2.5		8.0 - 8.3' FILL: Light brown coarse gravel, shells, silty sand; loose; saturated	0	Sample collected 153-SB-026-0810 from 8.0-8.5' bgs @1020
	9.0					8.3 - 10.5' FILL: Dark brown coarse gravel, shells, silty sand; loose; saturated		
	10.0							Sample collected 153-SB-026-1012 from 10.0-10.5' bgs @1025
	11.0					10.5 - 12.0' No Recovery		
	12.0	S-4	NA	2		12.0 - 12.8' CL: Black clayey silt with lenses of light brown fine to medium sand	0	
	13.0					12.8 - 14.0' OL: Light brown silt with trace fine sand, trace fine gravel, and organics; end of boring at 14' bgs		Sample collected 153-SB-026-1214 from 12.5-13.0' bgs @1030
	14.0							

PREPARED BY: MWV
CHECKED BY: BS

Honeywell Jersey City SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-027
DATE BEGAN: 3/17/10
DATE FINISHED: 3/17/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Electric Drill
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 14 ft bgs
GW DEPTH: 6.5 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	1.5		0.0 - 0.8' FILL: Light brown fine to medium sand	0	Sample collected 153-SB-027-0002 from 1.0-1.5' bgs @0840
	1.0					0.8 - 1.5' FILL: Dark brown/black silty fine sand, fine to medium gravel; very moist		
	2.0	S-2	NA	1.5		1.5 - 2.0' No recovery		Sample collected 153-SB-027-0204 from 2.0-2.5' bgs @0845
	3.0					2.0 - 4.0' FILL: Dark brown/black silty fine sand with clinker; moist		Sample collected 153-SB-027-0204 from 3.5-4.0' bgs @0850
	4.0	S-3	NA	1.5		4.0 - 6.0' FILL: Dark brown silty fine sand with clinker, fine to medium gravel	0	DUP @0852
	5.0							
	6.0	S-4	NA	1		6.0 - 6.8' FILL: Dark brown silty fine sand with clinker, fine to medium gravel		Sample collected 153-SB-027-0608 from 6.0-6.5' bgs @0855
	7.0					6.8 - 7.0' FILL: Light brown silty fine sand, with clinker, gravel; wet		
	8.0	S-5	NA	1		7.0 - 8.0' No recovery	0	Sample collected 153-SB-027-0810 from 8.0-8.5' bgs @0900
	9.0					8.0 - 9.0' FILL: Dark brown/black coarse gravelly sand with shells; wet		Sample collected 153-SB-027-1012 from 10.5-11.0' bgs @0905
	10.0	S-6	NA	1		9.0 - 10.0' No recovery		
	11.0					10.0 - 10.5' FILL: Dark brown/black coarse gravelly sand with shells; wet		Sample collected 153-SB-027-1214 from 12.5-13.0' bgs @0910
	12.0	S-7	NA	1.5		10.5 - 11.0' OL: Black clayey silt, organic odor, trace organic material	0	
	13.0					11.0 - 12.0' No recovery		
	14.0					12.0 - 13.5' OL: Black clayey silt, trace organic material; organic odor		
						13.5 - 14.0' No recovery; end of boring at 14' bgs		

PREPARED BY: MS
CHECKED BY: MWV

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-028
DATE BEGAN: 3/17/10
DATE FINISHED: 3/17/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Electric Drill
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 8 ft bgs
GW DEPTH: 6 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	1.5		0.0 - 0.5' FILL: Light brown clayey silt	0	Sample collected 153-SB-028-0002 1.0-1.5' bgs @0940
	1.0					0.5 - 1.5' FILL: Black/dark brown silty sand with gravel, coal, clinker		
						1.5 - 2.0' No recovery		
	2.0	S-2	NA	1		2.0 - 3.0' FILL: Black/dark brown silty sand with gravel, coal, clinker	0	Sample collected 153-SB-028-0204 from 2.5-3.0' bgs @0945
	3.0					3.0 - 4.0' No recovery		
	4.0	S-3	NA	1.5		4.0 - 5.0' FILL: Black/dark brown silty sand with gravel, coal, clinker	0	Sample collected 153-SB-028-0406 from 5.0-5.5' bgs @0950
	5.0					5.0 - 5.5' FILL: Very moist fine gravelly sand with coal, shells; rust colored 5.25-5.5' bgs		
						5.5 - 6.0' No recovery		
	6.0	S-4	NA	1		6.0 - 7.0' FILL: Light brown gravelly sand; very moist; medium concret at 6.5-7.0' bgs	0	Sample collected 153-SB-028-0608 from 6.5-7.0' bgs @0955
	7.0					7.0 - 8.0' No recovery; end of boring at 8.0' bgs		
	8.0							

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153 | **PROJECT NO:** 3480050164 | **BORING ID:** 153-SB-029

DATE BEGAN: 3/17/10 | **DATE FINISHED:** 3/17/10 | **INSPECTOR:** B. Senna

DRILLING CO: B & B Drilling | **DRILLING METHOD:** Direct Push | **DRILL EQUIP:** Electric Drill

SAMPLING TOOL: Macrocore | **COMPLETION DEPTH:** 16 ft bgs | **GW DEPTH:** 6' bgs

DRILLER: Gordon Blewitt | **NORTH:** | **EAST:**

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	1.0		0.0 - 0.3' FILL: Red brown clayey silt	0	Sample collected 153-SB-029-0002 from 0.5-1.0' bgs @1050
						0.3 - 0.5' FILL: Coarse gravel		
	1.0					0.5 - 1.0' FILL: Dark brown silty fine sand with gravel		
	2.0	S-2	NA	.5		1.0 - 2.0' No recovery	0	Sample collected 153-SB-029-0204 from 2.0-2.5' bgs @1055
						2.0 - 2.5' FILL: Dark brown silty fine sand with gravel; moist		
	3.0					2.5 - 4.0' No recovery		
	4.0	S-3	NA	1.5		4.0 - 5.0' FILL: Dark brown silty fine sand with gravel; moist	0	
	5.0					5.0 - 5.5' FILL: Light brown silty fine sand with clinker, gravel; moist		Sample collected 153-SB-029-0406 from 5.0-5.5' bgs @1100
						5.5 - 6.0' No recovery		
▽	6.0	S-4	NA	1.0		6.0 - 6.5' FILL: Dark brown silty fine sand with gravel; wet	0	
	7.0					6.5 - 7.0' FILL: Light orange dense silt with yellow/white modules, some fine to medium gravel; potential COPR material		Sample collected 153-SB-029-0608 from 6.5-7.0' bgs @1105
						7.0 - 8.0' No recovery		
	8.0	S-5	NA	1.5		8.0 - 9.0' FILL: Light orange dense silt with yellow/white modules, some fine to medium gravel; potential COPR material	0	
	9.0					9.0 - 9.5' FILL: Light yellow dense silt with white modules, dark brown nodules		Sample collected 153-SB-029-0810 from 9.0-9.5' bgs @1110
						9.5 - 10.0' No recovery		
	10.0	S-6	NA	1.5		10.0 - 11.5' OL: Black clayey silt with trace organic material	0	Sample collected 153-SB-029-1012 from 10.5-11.0' bgs @1115
	11.0							

PREPARED BY: MS

CHECKED BY: MWV

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-029
DATE BEGAN: 3/17/10
DATE FINISHED: 3/17/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Electric Drill
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 16 ft bgs
GW DEPTH: 6' bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	12.0	S-7	NA	1.5		11.5 - 12.0' No recovery 12.0 - 13.3' OL: Black clayey silt with trace organic material	0	Sample collected 153-SB-029-1214 from 12.5-13.0' bgs @1120
	13.0					13.3 - 13.5' PT: Brown moist peat 13.5 - 14.0' No recovery		
	14.0	S-8	NA	1.0		14.0 - 15.0' OL: Light brown silt with organic material	0	Sample collected 153-SB-029-1416 from 14.0-14.5' bgs @1125
	15.0					15.0 - 16.0' No recovery; end of boring 16' bgs		
	16.0							

PREPARED BY: MS
CHECKED BY: MWV

Honeywell Jersey City, SA-5

SITE INFO: Site 153 Morris Canal
PROJECT NO: 3480050164
BORING ID: 153-SB-030
DATE BEGAN: 3/25/10
DATE FINISHED: 3/25/10
INSPECTOR: J. Bacchus/M. Daly
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610DT
SAMPLING TOOL: 4' Macrocore
COMPLETION DEPTH: 16 ft bgs
GW DEPTH: 5 ft bgs
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	4		0.0 - 0.7' ASPHALT	0	Sample collected 153-SB-030-0002 from 1.5-2.0' bgs @1045
	1.0					0.7 - 2.5' FILL: Black fine to medium sand, some red fine to medium sand with fine to medium gravel, trace coal, brick, and trash; loose, dry		Sample collected 153-SB-030-0004 from 3.0-3.5' bgs @1050
	2.0							
	3.0					2.5 - 3.5' FILL: Black fine to medium sand, some red fine to medium sand with fine to medium gravel, trace coal, brick, trash, and clay; loose, mist		Soft dig to 5.5ft then direct push
	4.0	S-2	NA	4		3.5 - 5.5' FILL: Red fine to medium sand; moist	0	
▽	5.0							Sample collected 153-SB-030-0406 from 5.5-6.0' bgs @1110
	6.0					5.5 - 7.5' FILL: Red sand, trace silt, trace fine to medium gravel, from 6.5-7.0' bgs thin red brown lenses; moderate density, wet		Sample collected 153-SB-030-0608 from 7.5-8.0' bgs @1120
	7.0					7.5 - 8.0' FILL: Red fine to medium sand, possible COPR material, greenish-gray lenses, trace gravel; moderate density, wet		
	8.0	S-3	NA	3		8.0 - 9.0' FILL: Brown fine to medium sand, fine to medium gravel; wet, loose	0	Sample collected 153-SB-030-0810 from 9.0-9.5' bgs @1125
	9.0					9.0 - 10.5' FILL: Fine to medium gravel with black fine to medium sand, trace trash,trace coal		Sample collected 153-SB-030-0810 from 10.5-11' bgs @1130
	10.0							
	11.0					10.5 - 11.0' FILL: Black silt, wood at 11' bgs		MUA sewer pipe located 18ft west of Wonder Bagel fence.
						11.0 - 12.0' No recovery		
	12.0	S-4	NA	4		12.0 - 15.0' OL: Black silt	0	Sample collected 153-SB-030-1214 from 12.5-13.0' bgs @1135
	13.0							
	14.0							Sample collected 153-SB-030-1416 from 15.0-15.5' bgs @1140
	15.0					15.0 - 16.0' SP: Gray fine to medium sand with trace organic material; loose, wet; end of boring at 16' bgs		
	16.0							

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153 Morris Canal
PROJECT NO: 3480050164
BORING ID: 153-SB-031
DATE BEGAN: 3/25/10
DATE FINISHED: 3/25/10
INSPECTOR: J. Bacchus/M. Daly
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push and soft dig
DRILL EQUIP: Geoprobe 6610DT
SAMPLING TOOL: 4' Macrocore
COMPLETION DEPTH: 16 ft bgs
GW DEPTH: 5 ft bgs
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	4		0.0 - 0.2' ASPHALT	0	Sample collected 153-SB-031-0002 from 1.5-2.0' bgs @0800
	1.0					0.2 - 2.0' FILL: Fine to medium sand, red fine to medium sand, trace gravel, trace silt, trace trash		DUP sample collected 153-SB-031-0002D from 1.5-2.0' bgs @0805
	2.0					2.0 - 4.0' FILL: Black fine to medium sand, crushed brick, trace silt; moist		Sample collected 153-SB-031-0204 from 3.5-4.0' bgs @0810
	3.0							
	4.0	S-2	NA	2.2		4.0 - 5.0' FILL: Black fine to medium sand, crushed brick, trace silt; moist	0	Soft dig to 5.0' to clear utilities and switch to direct push
	5.0					5.0 - 6.2' FILL: Brown fine to medium sand with fine to medium gravel; wet, loose		Sample collected 153-SB-031-0406 from 5.0-5.5' bgs @0945
	6.0					6.2 - 8.0' No recovery		
	7.0							Sample collected 153-SB-031-0608 from 6.0-6.2' bgs @0920
	8.0	S-3	NA	4		8.0 - 9.5' FILL: Brown silty fine to medium sand with trace clay, gravel, and degraded brick; loose, wet: from 9.0-9.5' bgs possible gray COPR material with green modeling	0	Sample collected 153-SB-031-0810 from 9.0-9.5' bgs @0925
	9.0							
	10.0					9.5 - 10.0' SP: Black medium to coarse sand; loose, wet		Sample collected 153-SB-031-1012 from 11.5-12.0' bgs @0930
	11.0					10.0 - 12.0' CL: Black clayey silt; wet, medium dense		
	12.0	S-4	NA	4		12.0 - 12.5' CL: Black clayey silt with fine to medium gravel; wet, medium dense	0	Sample collected 153-SB-031-1214 from 12.5-13.0' bgs @0935
	13.0					12.5 - 13.0' OL: Black clayey silt with dense organic material		Sample collected 153-SB-031-1416 from 15.0-15.5' bgs @0940, DUP @0945
	14.0					13.0 - 13.2' PT: Dark brown peat		
	15.0					13.2 - 16.0' SP: Dark gray fine sand, trace black silt; wet, loose; end of boring at 16.0' bgs		Driller grouted borehole
	16.0							

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153 Morris Canal
PROJECT NO: 3480050164
BORING ID: 153-SB-032
DATE BEGAN: 3/25/10
DATE FINISHED: 3/25/10
INSPECTOR: J. Bacchus
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610DT
SAMPLING TOOL: 4' Macrocore
COMPLETION DEPTH: 16 ft bgs
GW DEPTH: 5 ft bgs
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	4		0.0 - 0.2' ASPHALT	0	Boring originally marked as 033; next to fence behind Wonder Bagel
	1.0					0.2 - 0.8' CONCRETE		
	2.0					0.8 - 1.2' FILL: Wood, rail road ties and metal spike		Sample collected 153-SB-032-0002 from 1.5-2.0' bgs @1315
	3.0					1.2 - 2.8' FILL: Black fine to coarse sand with some fine to medium gravel, trace clinker and brick; loose, moist		
	4.0	S-2	NA	3.5		2.8 - 5.0' FILL: Grayish brown fine to medium sand, with some fine to medium gravel, some ash and shells; 2" glass shard @ 4.7' bgs, trace brick and ceramic tile; loose, moist	0	Sample collected 153-SB-032-0204 from 3.0-3.5' bgs @1320
▽	5.0							Sample collected 153-SB-032-0406 from 4.5-5.0' bgs @1325
	6.0					5.0 - 6.5' FILL: Trace coal, brick, tile, ash, possible COPR material, medium brown sand and wood; loose, wet		Note: BMUA came by to measure location of the sewer line parallel to Morris Canal property line
	7.0					6.5 - 7.5' FILL: Trace coal, brick, tile, ash, possible COPR material, with more medium brown sand, loose, wet, more gravel towards 7.5' bgs		Sample collected 153-SB-032-0608 from 6.0-6.5' bgs @1340
	8.0	S-3	NA	4		7.5 - 8.0' No recovery	0	
	9.0					8.0 - 9.5' FILL: Clinker, gravel, glass, shale with gray course sand (gravel and sand dominant); loose, wet		Sample collected 153-SB-032-0810 from 8.5-9.0' bgs @1345
	10.0							
	11.0					9.5 - 12.0' FILL: Black silty clay, trace gravel and coal, trace organic material, dark greenish gray towards 12.0' bgs; wet, loose		
	12.0	S-4	NA	4		12.0 - 12.8' OL: Dark grayish brown silty clay	0	Sample collected 153-SB-032-1012 from 11.5-12.0' bgs @1350
	13.0					12.8 - 15.0' SP: Gray fine sand with trace silt		
	14.0							Sample collected 153-SB-032-1214 from 13.0-13.5' bgs @1355
	15.0					15.0 - 16.0' SC: Brown sand with clay, trace silt, trace medium gravel, trace mica flakes; end of boring at 16' bgs		Sample collected 153-SB-032-1416 from 15.0-15.5' bgs @1400
	16.0							

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City SA-5

SITE INFO: Site 153
PROJECT NO: 3480050143
BORING ID: 153-SB-033
DATE BEGAN: 4/30/10
DATE FINISHED: 4/30/10
INSPECTOR: M. Daly
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe
SAMPLING TOOL: 4-ft Macrocore
COMPLETION DEPTH: 16 ft bgs
GW DEPTH: 6.5 ft bgs
DRILLER: E. Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	4		0.0 - 0.4' ASPHALT	0	5 ft to the west of original boring
	1.0					0.4 - 4.0' FILL: Brown silty fine to coarse sand, fine to medium gravel, some clinker and brick, trace coal		Sample collected 153-SB-033-0002 from 0.5-1.0' bgs @09:40
	2.0							
	3.0							Sample collected 153-SB-033-0204 from 3.0-3.5' bgs @09:45
	4.0	S-2	NA	1.5		4.0 - 5.5' : No recovery	0	
	5.0							
	6.0					5.5 - 7.0' FILL: Brown silty fine to coarse sand, fine to medium gravel, some clinker and brick, trace coal		Sample collected 153-SB-033-0406 from 5.5-6.0' bgs @09:50
	7.0					7.0 - 8.0' : No recovery		Sample collected 153-SB-033-0608 from 6.5-7.0' bgs @09:55
	8.0	S-3	NA	3.25		8.0 - 9.5' FILL: Clinker, trace fine to medium sand	0	
	9.0					9.5 - 10.0' FILL: Gray clayey silt (possible COPR), trace glass		Sample collected 153-SB-033-0810 from 9.5-10.0' bgs @10:00
	10.0					10.0 - 11.3' OL: Black clayey silt, trace fine sand		Sample collected 153-SB-033-1012 from 10.5-11.0' bgs @10:05, DUP @10:07
	11.0					11.3 - 12.0' : No recovery		
	12.0	S-4	NA	3.5		12.0 - 13.8' OL: Black clayey silt, trace fine sand	0	
	13.0							Sample collected 153-SB-033-1214 from 12.5-13.0' bgs @10:10
	14.0					13.8 - 15.5' SW: Gray fine to medium sand, trace silt		
	15.0					15.5 - 16.0' : No recovery; end of boring at 16'		Sample collected 153-SB-033-1416 from 14.5-15.0' bgs @10:15
	16.0							

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-042
DATE BEGAN: 3/22/10
DATE FINISHED: 3/22/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Hand Auger
DRILL EQUIP: Hand Auger
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 2.5 ft bgs
GW DEPTH: Not Encountered
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	2.5		0.0 - 2.5' FILL: Brown fine to medium sand with fine to coarse gravel; end of boring at 2.5' bgs	0	Sample collected 153-SB-042-0204 from 2.0-2.5' bgs @ 0750
	1.0						0	
	2.0						0	

PREPARED BY: MS
CHECKED BY: MWV

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-043
DATE BEGAN: 3/22/10
DATE FINISHED: 3/22/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Hand Auger
DRILL EQUIP: Hand Auger
SAMPLING TOOL: Hand Auger
COMPLETION DEPTH: 2.5 ft bgs
GW DEPTH: Not Encountered
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	2.5		0.0 - 2.5' FILL: Black silty fine to medium sand with clinker, gravel, and trace glass; end of boring at 2.5' bgs	0	Sample collected 153-SB-043-0204 from 2.0-2.5' bgs @ 0815
	1.0						0	
	2.0						0	

PREPARED BY: MS
CHECKED BY: MWV

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-044
DATE BEGAN: 3/22/10
DATE FINISHED: 3/22/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Hand Auger
DRILL EQUIP: Hand Auger
SAMPLING TOOL: Hand Auger
COMPLETION DEPTH: 2.5 ft bgs
GW DEPTH: Not Encountered
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	2.5		0.0 - 2.5' FILL: Black silty fine sand with clinker and gravel; end of boring at 2.5' bgs	0	Sample collected 153-SB-044-0204 from 2.0-2.5' bgs @ 0835
	1.0						0	
	2.0						0	

PREPARED BY: MS
CHECKED BY: MWV

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-045
DATE BEGAN: 3/22/10
DATE FINISHED: 3/22/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe
SAMPLING TOOL: 4' Macrocore
COMPLETION DEPTH: 2.5 ft bgs
GW DEPTH: Not Encountered
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	2.5		0.0 - 2.5' FILL: Black silty fine sand, with gravel; end of boring at 2.5' bgs	0	Collect 153-SB-045-0204 from 2.0-2.5' bgs @ 0855, DUP @0857
	1.0						0	
	2.0						0	

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-046
DATE BEGAN: 3/22/10
DATE FINISHED: 3/22/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Hand Tools
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 3.5 ft bgs
GW DEPTH: Not Encountered
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.5		0.0 - 2.0' FILL: Brown backfill	0	
	1.0						0	Sample collected 153-SB-046-0204 from 3.0-3.5' bgs @ 1015
							0	
	2.0					2.0 - 3.5' FILL: Dark brown silty fine sand with brick, gravel; end of boring at 3.5' bgs	0	
							0	
	3.0						0	

PREPARED BY: MS
CHECKED BY: MWV

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-047
DATE BEGAN: 3/22/10
DATE FINISHED: 3/22/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe
SAMPLING TOOL: 4' Macrocore
COMPLETION DEPTH: 3.5 ft bgs
GW DEPTH: Not Encountered
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	2		0.0 - 2.0' FILL: Brown backfill	0	
	1.0						0	
	2.0	S-2	NA	1.5		2.0 - 3.5' FILL: Red brown sandy silt with brick, gravel; end of boring at 3.5'	0	
	3.0						0	Sample collected 153-SB-047-0204 from 3.0-3.5' bgs @ 1035

PREPARED BY: MS
CHECKED BY: MWV

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-048
DATE BEGAN: 3/22/10
DATE FINISHED: 3/22/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Hand Tools
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 3.5 ft bgs
GW DEPTH: Not Encountered
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	2		0.0 - 2.0' FILL: Brown backfill	0	
	1.0						0	
	2.0	S-2	NA	1.5		2.0 - 3.5' FILL: Red brown sandy silt with brick, gravel; end of boring at 3.5' bgs	0	
	3.0						0	Sample collected 153-SB-048-0204 from 3.0-3.5' bgs @ 1100

PREPARED BY: MS
CHECKED BY: MWV

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-049
DATE BEGAN: 3/22/10
DATE FINISHED: 3/22/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Hand Tools
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 3.5 ft bgs
GW DEPTH: Not Encountered
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	2		0.0 - 2.0' FILL: Brown backfill	0	
	1.0						0	
	2.0	S-2	NA	1.5		2.0 - 3.5' FILL: Red brown sandy silt, brick, gravel, coal; end of boring at 3.5' bgs	0	
	3.0						0	Sample collected 153-SB-049-0204 from 3.0-3.5' bgs @ 1130

PREPARED BY: MS
CHECKED BY: MWV

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-050
DATE BEGAN: 3/22/10
DATE FINISHED: 3/22/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Hand Tools
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 3.5 ft bgs
GW DEPTH: Not Encountered
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	2		0.0 - 2.0' FILL: Brown backfill with gravel	0	
	1.0						0	
	2.0	S-2	NA	1.5		2.0 - 3.5' FILL: Red brown sandy silt, brick, gravel, wood; end of boring at 3.5' bgs	0	Sample collected 153-SB-050-0204 from 3.0-3.5' bgs @ 1145
	3.0						0	

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-051
DATE BEGAN: 3/31/10
DATE FINISHED: 3/31/10
INSPECTOR: J. Bacchus
DRILLING CO: B & B Drilling
DRILLING METHOD: Hand Auger
DRILL EQUIP: Hand Auger
SAMPLING TOOL: Hand Auger
COMPLETION DEPTH: 2.5ft bgs
GW DEPTH: Not Encountered
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	2.5		0.0 - 0.5' TOPSOIL	0	Sample collected 153-SB-051-0002 from 1.0-1.5' bgs @ 1145
						0.5 - 2.0' FILL: Brown fine to coarse sand, some fine to coarse gravel and brick, trace silt and glass; loose, moist		
	1.0						0	
								Sample collected 153-SB-051-0204 from 2.0-2.5' bgs @1145
	2.0					2.0 - 2.5' FILL: Black/dark brown fine to coarse sand, some fine to medium gravel and clinker, trace coal and brick; loose, moist; end of boring 2.5' bgs	0	

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-052
DATE BEGAN: 6/16/10
DATE FINISHED: 6/16/10
INSPECTOR: M. Daly
DRILLING CO: B & B Drilling
DRILLING METHOD: Hand Auger
DRILL EQUIP: Hand Auger
SAMPLING TOOL: Hand Auger
COMPLETION DEPTH: 2.0 ft bgs
GW DEPTH: Not Encountered
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	1.5		0.0 - 0.2' TOPSOIL: Topsoil, some organics	0	
						0.2 - 1.3' FILL: Red brown silt, some fine sand, trace fine gravel		
	1.0						0	Sample collected 153-SB-052-0002 from 1.0-1.5' bgs @ 7:55
						1.3 - 1.5' FILL: Dark brown silty fine sand, some asphalt		
						1.5 - 2.0' No recovery; end of boring at 2.0' bgs.		
	2.0							

PREPARED BY: BS
CHECKED BY: MS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-053
DATE BEGAN: 6/16/10
DATE FINISHED: 6/16/10
INSPECTOR: M. Daly
DRILLING CO: B & B Drilling
DRILLING METHOD: Hand Auger
DRILL EQUIP: Hand Auger
SAMPLING TOOL: Hand Auger
COMPLETION DEPTH: 4.0 ft bgs
GW DEPTH: Not Encountered
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	1.0		0.0 - 0.2' TOPSOIL: Topsoil, organics	0	Sample collected 153-SB-053-0002 from 0.0-0.5' bgs @ 8:00
						0.2 - 0.8' FILL: Red brown silt, some organics, trace fine gravel and brick		
						0.8 - 1.0' FILL: Asphalt		
	1.0					1.0 - 2.0' No recovery	0	
	2.0	S-2	NA	1.5		2.0 - 3.5' FILL: Asphalt, trace coal and brick, trace brown fine to medium sand, loose	0	
	3.0							Sample collected 153-SB-053-0204 from 3.0-3.5' bgs @ 8:05
						3.5 - 4.0' No recovery; end of boring at 4.0 ft. bgs.		
	4.0							

PREPARED BY: BS
CHECKED BY: MS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-054
DATE BEGAN: 6/16/10
DATE FINISHED: 6/16/10
INSPECTOR: M. Daly
DRILLING CO: B & B Drilling
DRILLING METHOD: Hand Auger
DRILL EQUIP: Hand Auger
SAMPLING TOOL: Hand Auger
COMPLETION DEPTH: 4.0 ft bgs
GW DEPTH: Not Encountered
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	1.5		0.0 - 0.2' TOPSOIL: Topsoil, organics	0	
						0.2 - 1.5' FILL: Red brown silt, trace fine sand, trace organics, trace sandstone, trace brick, trace fine gravel		
	1.0							Sample collected 153-SB-054-0002 from 1.0-1.5' bgs @ 8:10
						1.5 - 2.0' No recovery		
	2.0	S-2	NA	1.5		2.0 - 2.5' FILL: Red brown silt, trace fine sand, trace medium gravel, trace organics	0	
						2.5 - 3.0' FILL: Concrete		
	3.0					3.0 - 3.5' FILL: Brown silty sand, trace orange silt, some asphalt, clinker, trace brick		Sample collected 153-SB-054-0204 from 3.0-3.5' bgs @ 8:15
						3.5 - 4.0' No recovery; end of boring at 4.0 ft. bgs.		
	4.0							

PREPARED BY: BS
CHECKED BY: MS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-055
DATE BEGAN: 7/26/10
DATE FINISHED: 7/26/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Hand Auger
DRILL EQUIP: Hand Auger
SAMPLING TOOL: Hand Auger
COMPLETION DEPTH: 4.0 ft bgs
GW DEPTH: Not Encountered
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	2.0		0.0 - 1.0' TOPSOIL: Light brown topsoil	0	
	1.0					1.0 - 2.0' FILL: Brown silty sand, gravel		Sample collected 153-SB-055-0002 from 0.5-1.0' bgs @ 8:25
	2.0	S-2	NA	2.0		2.0 - 4.0' FILL: Brown silty sand, gravel, asphalt, glass, coal; end of boring at 4.0 ft. bgs.	0	
	3.0							Sample collected 153-SB-055-0204 from 2.5-3.0' bgs @ 8:30
	4.0							

PREPARED BY: BS
CHECKED BY: MS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-056
DATE BEGAN: 7/26/10
DATE FINISHED: 7/26/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Hand Auger
DRILL EQUIP: Hand Auger
SAMPLING TOOL: Hand Auger
COMPLETION DEPTH: 4.0 ft bgs
GW DEPTH: Not Encountered
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	2.0		0.0 - 0.8' TOPSOIL: Light brown topsoil	0	
	1.0					0.8 - 2.0' FILL: Brown silty sand		Sample collected 153-SB-056-0002 from 1.0-1.5' bgs @ 8:45
	2.0	S-2	NA	2.0		2.0 - 4.0' FILL: Brown silty sand, gravel; end of boring at 4.0 ft. bgs.	0	
	3.0							Sample collected 153-SB-056-0204 from 3.5-4.0' bgs @ 8:50
	4.0							

PREPARED BY: BS
CHECKED BY: MS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-057
DATE BEGAN: 12/21/10
DATE FINISHED: 12/21/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Soft Dig
DRILL EQUIP: Soft Dig Vac
SAMPLING TOOL: Stainless steel trowell
COMPLETION DEPTH: 7.0 ft bgs
GW DEPTH: 5.5 ft bgs
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	6.5		0.0 - 0.5' FILL: Asphalt, gravel	0	
						0.5 - 1.5' FILL: Red brown/light brown silt, gravel		Sample collected 153-SB-057-0002 from 1.0-1.5' bgs @ 8:55
	1.0							
						1.5 - 4.5' FILL: Dark brown/black silty sand, gravel, brick, clinker		Sample collected 153-SB-057-0204 from 2.5-3.0' bgs @ 9:00
	2.0							
	3.0							
	4.0						0	
						4.5 - 5.5' FILL: Red brown/black silty sand, gravel, brick, clinker, glass		Sample collected 153-SB-057-0406 from 4.5-5.0' bgs @ 9:05
	5.0							
						5.5 - 6.5' FILL: White/gray COPR; soft, wet		Sample collected 153-SB-057-0608 from 6.0-6.5' bgs @ 9:10
	6.0							
						6.5 - 7.0' No recovery; end of boring at 7.0' bgs.		
	7.0							

PREPARED BY: BS
CHECKED BY: MS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-058
DATE BEGAN: 12/15/10
DATE FINISHED: 12/15/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Hand Tools
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 12 ft bgs
GW DEPTH: 6.0 ft bgs
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	1.5		0.0 - 1.5' FILL: Light brown silty sand, gravel	0	Sample collected 153-SB-058-0002 from 1.0-1.5' bgs @ 11:30
	1.0					1.5 - 2.0' No recovery		
	2.0	S-2	NA	1.0		2.0 - 3.0' FILL: Light brown fine to medium sand	0	Sample collected 153-SB-058-0204 from 2.5-3.0' bgs @ 11:35
	3.0					3.0 - 4.0' No recovery		
	4.0	S-3	NA	1.5		4.0 - 5.5' FILL: Black silt, coal, glass, white nodules; potential COPR	0	Sample collected 153-SB-058-0406 from 4.5-5.0' bgs @ 11:40
	5.0					5.5 - 6.0' No recovery		
▽	6.0	S-4	NA	1.0		6.0 - 6.5' FILL: Black silty sand, clinker, coal, glass; wet	0	Sample collected 153-SB-058-0608 from 6.5-7.0' bgs @ 11:45
	7.0					6.5 - 7.0' FILL: Red brown silt, gravel		
						7.0 - 8.0' No recovery		
	8.0	S-5	NA	1.5		8.0 - 9.5' SM: Light brown fine to medium sand, trace organics; wet	0	Sample collected 153-SB-058-0810 from 9.0-9.5' bgs @ 11:50
	9.0					9.5 - 10.0' No recovery		
	10.0	S-6	NA	1.5		10.0 - 11.5' SM: Light brown fine to medium sand, trace organics, fine to medium gravel; wet		Sample collected 153-SB-058-1012 from 10.5-11.0' bgs @ 11:55
	11.0					11.5 - 12.0' No recovery; end of boring at 12.0' bgs.		
	12.0							

PREPARED BY: BS
CHECKED BY: MS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-059
DATE BEGAN: 12/15/10
DATE FINISHED: 12/15/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 14 ft bgs
GW DEPTH: 6.0 ft bgs
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.5		0.0 - 3.0' FILL: Brown silty sand, gravel, brick, coal, glass	0	Sample collected 153-SB-059-0002 from 1.0-1.5' bgs @ 8:10
	1.0							
	2.0						0	Sample collected 153-SB-059-0204 from 3.0-3.5' bgs @ 8:15
	3.0					3.0 - 3.5' FILL: Light orange fine to medium sand, gravel		
						3.5 - 4.0' No recovery		
	4.0	S-2	NA	3.0		4.0 - 5.5' FILL: Light orange fine to medium sand, gravel, glass	0	Sample collected 153-SB-059-0406 from 4.5-5.0' bgs @ 8:20
	5.0					5.5 - 6.0' FILL: Light orange fine to medium sand, gravel, glass; moist		
▽	6.0					6.0 - 7.0' FILL: Orange fine to medium sand, trace gravel; wet	0	Sample collected 153-SB-059-0608 from 6.5-7.0' bgs @ 8:25
	7.0					7.0 - 8.0' No recovery		
	8.0	S-3	NA	3.0		8.0 - 9.0' FILL: Orange fine to medium sand, trace gravel; wet	0	
	9.0					9.0 - 11.0' SM: Red brown fine to medium sand, silt, fine to medium gravel		Sample collected 153-SB-059-0810 from 8.5-9.0' bgs @ 8:30
	10.0						0	Sample collected 153-SB-059-1012 from 10.5-11.0' bgs @ 8:35
	11.0					11.0 - 12.0' No recovery		
	12.0	S-4	NA	2.0		12.0 - 14.0' SM: Red brown fine to medium sand, silt, fine to medium gravel; end of boring at 14.0' bgs.	0	Sample collected 153-SB-059-1214 from 12.5-13.0' bgs @ 8:40
	13.0							
	14.0							

PREPARED BY: BS
CHECKED BY: MS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-060
DATE BEGAN: 12/15/10
DATE FINISHED: 12/15/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 14 ft bgs
GW DEPTH: 6.5 ft bgs
DRILLER: Ed Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.5		0.0 - 0.5' FILL: Asphalt, gravel	0	Sample collected 153-SB-060-0002 from 0.5-1.0' bgs @ 8:30
	1.0					0.5 - 2.0' FILL: Dark brown silty sand, gravel, glass, coal		
	2.0					2.0 - 3.5' FILL: Dark brown/ black silty sand, gravel, glass, coal, ash, shells	0	
	3.0					3.5 - 4.0' FILL: No recovery		Sample collected 153-SB-060-0204 from 3.0-3.5' bgs @ 8:35
	4.0	S-2	NA	3.0		4.0 - 5.0' FILL: Light orange/brown fill material; shells, ash, coal, glass	0	Sample collected 153-SB-060-0406 from 4.0-4.5' bgs @ 8:40
	5.0					5.0 - 7.0' FILL: Black silty sand, clinker, wood, shells, glass; wet at 6.5' bgs.		
	6.0						0	
	7.0					7.0 - 8.0' No recovery		Sample collected 153-SB-060-0608 from 6.5-7.0' bgs @ 8:45
	8.0	S-3	NA	3.0		8.0 - 8.3' FILL: Brown fine to medium sand; wet	0	Sample collected 153-SB-060-0810 from 8.0-8.5' bgs @ 8:50
	9.0					8.3 - 10.0' OL: Black clayey silt; wet		
	10.0					10.0 - 11.0' OL: Gray clayey silt, trace organics, trace shells; wet	0	Sample collected 153-SB-060-1012 from 10.5-11.0' bgs @ 8:55
	11.0					11.0 - 12.0' No recovery		
	12.0	S-4	NA	1.5		12.0 - 13.0' OL: Gray clayey silt, trace organics, trace shells; wet	0	Sample collected 153-SB-060-1214 from 12.5-13.0' bgs @ 9:00
	13.0					13.0 - 13.5' PT: Brown peat; moist		
	14.0					13.5 - 14.0' No recovery; end of boring at 14.0' bgs.		

PREPARED BY: BS
CHECKED BY: MS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-061
DATE BEGAN: 12/14/10
DATE FINISHED: 12/14/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 12 ft bgs
GW DEPTH: 6.5 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.0		0.0 - 0.5' FILL: Asphalt, gravel	0	Sample collected 153-SB-061-0002 from 1.0-1.5' bgs @ 9:05
	1.0					0.5 - 1.0' FILL: Brown sand, brick, gravel		
	2.0					1.0 - 2.3' FILL: Dark brown silty sand, glass, coal, tar, gravel	0	
	3.0					2.3 - 3.0' FILL: Light orange fine to medium sand		Sample collected 153-SB-061-0204 from 2.5-3.0' bgs @ 9:10
	4.0	S-2	NA	3.0		3.0 - 4.0' No recovery		
	5.0					4.0 - 4.5' FILL: Light orange fine to medium sand	0	Sample collected 153-SB-061-0406 from 4.5-5.0' bgs @ 9:15
	6.0					4.5 - 6.0' FILL: Light brown/red brown silt, fine sand, shells, glass, clinker, coal		
	7.0					6.0 - 7.0' FILL: Light brown fine to medium sand; wet at 6.5' bgs.	0	Sample collected 153-SB-061-0608 from 6.5-7.0' bgs @ 9:20
	8.0	S-3	NA	3.0		7.0 - 8.0' No recovery		
	9.0					8.0 - 8.5' FILL: Light brown fine to medium sand	0	Sample collected 153-SB-061-0810 from 8.5-9.0' bgs @ 9:25
	10.0					8.5 - 9.3' OL: Black clayey silt		
	11.0					9.3 - 10.5' OL: Dark gray clayey silt, organics	0	Sample collected 153-SB-061-1012 from 10.0-10.5' bgs @ 9:30
	12.0					10.5 - 11.0' PT: Brown peat; moist		
						11.0 - 12.0' No recovery; end of boring at 12.0' bgs.		

PREPARED BY: BS
CHECKED BY: MS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-062
DATE BEGAN: 12/14/10
DATE FINISHED: 12/14/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 12 ft bgs
GW DEPTH: 6.0 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.5		0.0 - 0.5' FILL: Asphalt, gravel	0	
						0.5 - 2.0' FILL: Dark brown silty sand, gravel		Sample collected 153-SB-062-0002 from 1.0-1.5' bgs @ 10:50
	1.0							
	2.0					2.0 - 2.3' FILL: Concrete	0	
						2.3 - 3.5' FILL: Black silty sand, shells, ash, coal, gravel		Sample collected 153-SB-062-0204 from 2.5-3.0' bgs @ 10:55
	3.0							
						3.5 - 4.0' No recovery		
	4.0	S-2	NA	3.0		4.0 - 5.5' FILL: Brown silty fine sand, coal, gravel, brick	0	Sample collected 153-SB-062-0406 from 4.5-5.0' bgs @ 11:00
	5.0							
						5.5 - 6.0' FILL: Crushed brick		
	6.0					6.0 - 7.0' FILL: Dark brown silty sand, shells, gravel, brick, coal; wet	0	Sample collected 153-SB-062-0608 from 6.5-7.0' bgs @ 11:05
	7.0							
						7.0 - 8.0' No recovery		
	8.0	S-3	NA	3.0		8.0 - 8.8' OL: Black clayey silt	0	Sample collected 153-SB-062-0810 from 8.0-8.5' bgs @ 11:10
	9.0					8.8 - 10.5' SM: Brown fine to medium sand, organics		
	10.0						0	
						10.5 - 11.0' PT: Brown peat; moist		Sample collected 153-SB-062-1012 from 10.5-11.0' bgs @ 11:15
	11.0					11.0 - 12.0' No recovery; end of boring at 12.0' bgs.		
	12.0							

PREPARED BY: BS
CHECKED BY: MS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-063
DATE BEGAN: 12/14/10
DATE FINISHED: 12/14/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 14 ft bgs
GW DEPTH: 6.0 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.0		0.0 - 0.5' FILL: Asphalt, gravel	0	
	1.0					0.5 - 3.0' FILL: Black silty sand, ash, brick, shells, glass		Sample collected 153-SB-063-0002 from 1.0-1.5' bgs @ 9:45
	2.0						0	
	3.0							Sample collected 153-SB-063-0204 from 2.5-3.0' bgs @ 9:50
						3.0 - 4.0' No recovery		
	4.0	S-2	NA	3.5		4.0 - 6.0' FILL: Black silty sand, ash, brick, shells, glass	0	
	5.0							Sample collected 153-SB-063-0406 from 4.5-5.0' bgs @ 9:55
▽	6.0					6.0 - 7.5' FILL: Dark brown silty sand, shells, gravel, clinker, coal	0	
	7.0							Sample collected 153-SB-063-0608 from 7.0-7.5' bgs @ 10:00
						7.5 - 8.0' No recovery		
	8.0	S-3	NA	3.0		8.0 - 9.5' FILL: Dark brown silty sand, shells, gravel, clinker, coal	0	Sample collected 153-SB-063-0810 from 8.5-9.0' bgs @ 10:05
	9.0							
	10.0					9.5 - 11.0' FILL: Black/dark brown silt, layers of clayey silt	0	Sample collected 153-SB-063-1012 from 10.5-11.0' bgs @ 10:10
	11.0							Sample collected 153-SB-063-1012DP from 10.5-11.0' bgs @ 10:12
						11.0 - 12.0' No recovery		
	12.0	S-4	NA	2.0		12.0 - 12.5' OL: Black clayey silt	0	
	13.0					12.5 - 14.0' SM: Light brown fine to medium sand, organics; end of boring at 14.0' bgs.		Sample collected 153-SB-063-1214 from 13.0-13.5' bgs @ 10:15
	14.0							

PREPARED BY: BS
CHECKED BY: MS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-064
DATE BEGAN: 12/14/10
DATE FINISHED: 12/14/10
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 14 ft bgs
GW DEPTH: 6.5 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	4.0		0.0 - 0.4' ASPHALT: Asphalt, gravel	0	
	1.0					0.4 - 4.0' FILL: Brown silty fine to coarse sand, fine to medium gravel, some clinker and brick, trace coal		
	2.0							
	3.0							
	4.0	S-2	NA	1.5		4.0 - 5.5' : No recovery	0	
	5.0							
	6.0					5.5 - 7.0' FILL: Brown silty fine to coarse sand, fine to medium gravel, some clinker and brick, trace coal		
	7.0					7.0 - 8.0' : No recovery		
	8.0	S-3	NA	3.0		8.0 - 8.5' FILL: Dark brown silty sand, gravel, coal, shells; loose, wet	0	
	9.0					8.5 - 9.0' FILL: Dark brown fine to medium sand, shells		
	10.0					9.0 - 10.5' OL: Light brown silt, organics		Sample collected 153-SB-064-0810 from 9.5-10.0' bgs @10:50
	11.0					10.5 - 11.0' PT: Brown peat; moist		Sample collected 153-SB-064-1012 from 10.5-11.0' bgs @10:55
	12.0					11.0 - 12.0' No recovery; end of boring at 12.0' bgs.		

PREPARED BY: BS
CHECKED BY: MS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-065
DATE BEGAN: 2/15/11
DATE FINISHED: 2/15/11
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 12 ft bgs
GW DEPTH: 8.0 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.0		0.0 - 0.5' ASPHALT	0	Sample collected 153-SB-065-0002 from 1.0-1.5' bgs @1125
	1.0					0.5 - 2.0' FILL: Dark brown silty sand, coal, glass, gravel, wood		
	2.0					2.0 - 3.0' FILL: Dark brown silty sand, coal, glass, gravel, wood; moist		Sample collected 153-SB-065-0204 from 2.5-3.0' bgs @1130
	3.0					3.0 - 4.0' No recovery		
	4.0	S-2	NA	3.0		4.0 - 4.5' FILL: Dark brown silty sand, fine to coarse gravel, fine clinker, trace coal	0	
	5.0					4.5 - 6.5' FILL: Brown silt, fine to medium sand, fine clinker, fine to medium brick, trace coal; moist		Sample collected 153-SB-065-0406 from 5.0-5.5' bgs @1135
	6.0					6.5 - 7.0' FILL: Brown silt, fine to medium sand, fine clinker, fine to medium brick, trace coal; very moist		Sample collected 153-SB-065-0608 from 6.5-7.0' bgs @1140
	7.0					7.0 - 8.0' No recovery		
	8.0	S-3	NA	3.0		8.0 - 9.5' FILL: Brown silty sand, fine to coarse gravel, trace clinker; loose; wet	0	Sample collected 153-SB-065-0810 from 9.0-9.5' bgs @1145
	9.0							
	10.0					9.5 - 10.5' FILL: Light brown fine to medium sand, trace gravel; wet		
	11.0					10.5 - 11.0' OL: Black clayey silt; organic odor; very moist		Sample collected 153-SB-065-1012 from 10.5-11.0' bgs @1150
	12.0					11.0 - 12.0' No recovery; end of boring @12' bgs		

PREPARED BY: BS
CHECKED BY: MS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-066
DATE BEGAN: 2/15/11
DATE FINISHED: 2/15/11
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 12 ft bgs
GW DEPTH: 8.0 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.0		0.0 - 0.5' ASPHALT	0	Sample collected 153-SB-066-0002 from 1.5-2.0' bgs @1200
	1.0					0.5 - 2.5' FILL: Light brown silty sand, fine to coarse gravel, crushed concrete, trace glass		
	2.0					2.5 - 3.0' FILL: Light gray assorted fill material, coal ash, coal, wood, ceramics, glass		Sample collected 153-SB-066-0204 from 2.5-3.0' bgs @1205
	3.0					3.0 - 4.0' No recovery		
	4.0	S-2	NA	3.0		4.0 - 7.0' FILL: Light gray assorted fill material, coal ash, coal, wood, ceramics, glass	0	Sample collected 153-SB-066-0406 from 5.0-5.5' bgs @1210
	5.0							
	6.0							Sample collected 153-SB-066-0608 from 6.5-7.0' bgs @1215
	7.0					7.0 - 8.0' No recovery		
▽	8.0	S-3	NA	3.0		8.0 - 8.5' FILL: Light gray assorted fill material, coal ash, coal, wood, ceramics, glass; wet	0	
	9.0					8.5 - 10.5' FILL: Black silty sand, coal ash, wood, shells, fine to coarse gravel; wet		Sample collected 153-SB-066-0810 from 9.0-9.5' bgs @12:20
	10.0							
	11.0					10.5 - 11.0' OL: Black clayey silt, organics; very moist		Sample collected 153-SB-066-1012 from 10.5-11.0' bgs @1225
	12.0					11.0 - 12.0' No recovery; end of boring @12' bgs		

PREPARED BY: BS
CHECKED BY: MS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-067
DATE BEGAN: 2/15/11
DATE FINISHED: 2/15/11
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 13 ft bgs
GW DEPTH: 7.0 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.0		0.0 - 0.5' ASPHALT	0	Sample collected 153-SB-067-0002 from 1.0-1.5' bgs @1230
	1.0					0.5 - 1.5' FILL: Light brown/red brown silt, trace fine sand		
	2.0					1.5 - 2.5' FILL: Brown silty sand, brick, coal ash		Sample collected 153-SB-067-0204 from 2.5-3.0' bgs @1235
	3.0					2.5 - 3.0' FILL: Light gray coal ash, coal, glass, wood		
	4.0	S-2	NA	3.0		3.0 - 4.0' No recovery	0	
	5.0					4.0 - 6.5' FILL: Brown silty sand, fine to coarse gravel		Sample collected 153-SB-067-0406 from 5.0-5.5' bgs @1240
	6.0							
	7.0					6.5 - 7.0' FILL: Light brown silt, fine sand; very moist		Sample collected 153-SB-067-0608 from 6.5-7.0' bgs @1245
	8.0	S-3	NA	3.0		7.0 - 8.0' No recovery	0	
	9.0					8.0 - 10.5' FILL: Light brown/light gray silt, trace fine sand, coarse gravel; wet		Sample collected 153-SB-067-0810 from 9.0-9.5' bgs @12:50
	10.0							
	11.0					10.5 - 11.0' OL: Black clayey silt, organics; very moist		Sample collected 153-SB-067-1012 from 10.5-11.0' bgs @1255
	12.0	S-4	NA	1.0		11.0 - 12.0' No recovery	0	Sample collected 153-SB-067-1214 from 12.5-13.0' bgs @1257
	13.0					12.0 - 13.0' PT: Brown peat; moist; end of boring at 13.0' bgs.		

PREPARED BY: BS
CHECKED BY: MS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-068
DATE BEGAN: 2/15/11
DATE FINISHED: 2/15/11
INSPECTOR: B. Senna
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 13 ft bgs
GW DEPTH: 7.5 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.0		0.0 - 0.5' ASPHALT	0	Sample collected 153-SB-068-0002 from 1.0-1.5' bgs @1300
	1.0					0.5 - 1.3' FILL: Light brown fine to medium sand, silt, fine to coarse gravel		
	2.0					1.3 - 3.0' FILL: Light gray coal ash, coal, glass, brick		Sample collected 153-SB-068-0204 from 2.5-3.0' bgs @1305
	3.0					3.0 - 4.0' No recovery		
	4.0	S-2	NA	3.0		4.0 - 6.0' FILL: Light gray coal ash, coal, glass, brick	0	Sample collected 153-SB-068-0406 from 5.0-5.5' bgs @1310
	5.0							
	6.0					6.0 - 7.0' FILL: Black coal ash, wood, coal, plastic, shells; moist		Sample collected 153-SB-068-0608 from 6.5-7.0' bgs @1315
	7.0					7.0 - 8.0' No recovery		
	8.0	S-3	NA	3.0		8.0 - 10.0' FILL: Black/gray coal ash, coal, glass, brick, fine to coarse gravel; wet	0	Sample collected 153-SB-068-0810 from 9.0-9.5' bgs @1320
	9.0							
	10.0					10.0 - 10.5' FILL: Black silty sand, shells, trace glass; wet		
	11.0					10.5 - 11.0' OL: Black clayey silt, organics; very moist		Sample collected 153-SB-068-1012 from 10.5-11.0' bgs @1325
						11.0 - 12.0' No recovery		
	12.0	S-4	NA	1.0		12.0 - 13.0' PT: Brown peat; moist; end of boring at 13.0' bgs.	0	Sample collected 153-SB-068-1214 from 12.5-13.0' bgs @1330
	13.0							

PREPARED BY: BS
CHECKED BY: MS

Honeywell Study Area - 5

LOCATION: Site 153, Morris Canal, Jersey City, NJ
PROJECT NO: 3480050136
BORING ID: 153-SB-069
DATE BEGAN: 5/20/11
DATE FINISHED: 5/20/11
INSPECTOR: M. Daly/ K. Kacperowski
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 6610DT
SAMPLING TOOL: 2" diameter macrocore
COMPLETION DEPTH: 12.0' bgs
GW DEPTH: 5.5' bgs
DRILLER: Ed Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	N/A	1.5		0.0 - 0.3' FILL: Brick	N/A	153-SB-069-0002 collected from 0.5-1.0' bgs @7:50
	1.0					0.3 - 1.5' FILL: Dark brown fine to medium silty sand, fine to medium gravel; wet		
	2.0					1.5 - 4.0' No recovery		
	3.0							
	4.0	S-2		3.0		4.0 - 5.0' FILL: Dark gray silty clay, fine to medium sand, coal flakes		Organic odor from 4.0-5.0' bgs 153-SB-069-0406 collected from 4.0-4.5' bgs @7:55
	5.0					5.0 - 7.0' FILL: Light brown clayey silt, fine sand, trace fine gravel; firm, wet		
	6.0							
	7.0					7.0 - 7.5' FILL: Brick		153-SB-069-0608 collected from 6.5-7.0' bgs @8:00
						7.5 - 8.0' No recovery		
	8.0	S-3		4.0		8.0 - 8.3' FILL: Light gray fine to medium sand		153-SB-069-0809 collected from 8.0-8.25' bgs @8:05
	9.0					8.3 - 8.5' PT: Peat		153-SB-069-0809 collected from 8.25-8.50' bgs @8:10 (HOLD)
						8.5 - 9.0' SW: Brown fine to medium sand		
	10.0					9.0 - 12.0' ML: Dark gray organic silt, fine sand; very loose, wet; end of boring at 12.0'		
	11.0							
	12.0							

PREPARED BY: MS
CHECKED BY: JB

Honeywell Study Area - 5

LOCATION: Site 153, Morris Canal, Jersey City, NJ
PROJECT NO: 3480050136
BORING ID: 153-SB-070
DATE BEGAN: 5/20/11
DATE FINISHED: 5/20/11
INSPECTOR: M. Daly/ T. Giouzelis
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 6610DT
SAMPLING TOOL: 2" diameter macrocore
COMPLETION DEPTH: 12.0' bgs
GW DEPTH: 5.0' bgs
DRILLER: Ed Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	N/A	2.5		0.0 - 0.8' FILL: Brown fine to medium silty sand, fine to medium gravel	N/A	
	1.0					0.8 - 1.5' FILL: Dark gray fine to medium silty sand, some coal, ash, shells; moist		153-SB-070-0002 collected from 1.0-1.5' bgs @8:20
						1.5 - 1.6' FILL: Degraded concrete		
	2.0					1.6 - 2.3' FILL: Grayish brown clayey silt; firm		153-SB-070-0204 collected from 2.0-2.5' bgs @8:25
						2.3 - 2.5' FILL: Reddish brown silt, some fine sand		
	3.0					2.5 - 4.0' No recovery		
	4.0	S-2		3.25		4.0 - 4.3' FILL: Reddish brown silt, some fine sand		
						4.3 - 5.0' FILL: Grayish brown fine to medium silty sand, trace brick and coal; moist		153-SB-070-0406 collected from 4.5-5.0' bgs @8:30
▽	5.0					5.0 - 6.0' FILL: Brown fine to medium silty sand, trace shells; loose, wet		
	6.0					6.0 - 6.8' FILL: Dark brown organic silty clay; firm, wet		153-SB-070-0608 collected from 6.0-6.5' bgs @8:35
	7.0					6.8 - 7.3' FILL: Brown fine to medium sand, trace organics; loose, wet		
						7.3 - 8.0' No recovery		
	8.0	S-3		4.0		8.0 - 11.0' SW: Brown fine to medium sand; loose, wet		
	9.0							153-SB-070-0810 collected from 9.0-9.5' bgs @8:40
	10.0							153-SB-070-1012 collected from 10.5-11.0' bgs @8:45
	11.0					11.0 - 11.5' OH: Gray organic clay; firm, wet		
	12.0					11.5 - 12.0' PT: Peat; end of boring at 12.0'		

PREPARED BY: MS
CHECKED BY: JB

Honeywell Study Area - 5

LOCATION: Site 153, Morris Canal, Jersey City, NJ
PROJECT NO: 3480050136
BORING ID: 153-SB-071
DATE BEGAN: 5/20/11
DATE FINISHED: 5/20/11
INSPECTOR: M. Daly/ T. Giouzelis
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 6610DT
SAMPLING TOOL: 2" diameter macrocore
COMPLETION DEPTH: 12.0' bgs
GW DEPTH: 5.0' bgs
DRILLER: Ed Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	N/A	3.0		0.0 - 0.5' ASPHALT	N/A	Initial refusal @ 1.0' bgs, moved ~2' north
	1.0					0.5 - 1.5' FILL: Reddish brown fine to medium silty sand, fine to medium gravel, trace brick		
	2.0					1.5 - 2.3' FILL: Dark gray silt, trace fine sand and ash		153-SB-071-0002 collected from 1.5-2.0' bgs @8:50
						2.3 - 2.5' FILL: Degraded brick		
	3.0					2.5 - 3.5' FILL: Brown fine to medium silty sand, fine gravel; moist		153-SB-071-0204 collected from 2.5-3.0' bgs @8:55
						3.5 - 4.0' No recovery		
	4.0	S-2		4.0		4.0 - 7.0' FILL: Brown fine to medium silty sand, fine gravel; moist		153-SB-071-0406 collected from 4.5-5.0' bgs @9:00
▽	5.0							153-SB-071-0406 collected from 4.5-5.0' bgs @9:02 (DUP)
	6.0							
	7.0					7.0 - 7.5' FILL: Dark brown clayey silt, some wood; wet		
	8.0	S-3		4.0		7.5 - 10.0' FILL: Brown fine to medium sand; loose, wet		153-SB-071-0608 collected from 7.5-8.0' bgs @9:05
	9.0							153-SB-071-0810 collected from 8.5-9.0' bgs @9:10
	10.0					10.0 - 10.5' OH: Gray organic silty clay		153-SB-071-1012 collected from 10.0-10.5' bgs @9:15
	11.0					10.5 - 12.0' PT: Peat; end of boring at 12.0'		
	12.0							

PREPARED BY: MS
CHECKED BY: JB

Honeywell Study Area - 5

LOCATION: Site 153, Morris Canal, Jersey City, NJ
PROJECT NO: 3480050136
BORING ID: 153-SB-072
DATE BEGAN: 5/20/11
DATE FINISHED: 5/20/11
INSPECTOR: M. Daly/ T. Giouzelis
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 6610DT
SAMPLING TOOL: 2" diameter macrocore
COMPLETION DEPTH: 12.0' bgs
GW DEPTH: 7.0' bgs
DRILLER: Ed Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	N/A	3.0		0.0 - 0.3' ASPHALT	N/A	
						0.3 - 2.5' FILL: Dark brown fine to medium silty sand, fine to medium gravel, trace brick and coal		153-SB-072-0002 collected from 0.5-1.0' bgs @9:20
	1.0							
	2.0							153-SB-072-0204 collected from 2.0-2.5' bgs @9:25
						2.5 - 2.8' FILL: Degraded brick		
	3.0					2.8 - 3.0' FILL: Dark brown fine to medium sandy silt		
						3.0 - 4.0' No recovery		
	4.0	S-2		3.75		4.0 - 4.5' FILL: Dark gray silty fine to medium sand, trace fine gravel and brick; moist		153-SB-072-0406 collected from 4.0-4.5' bgs @9:30
	5.0					4.5 - 7.8' FILL: Brown fine to medium sand; wet from 7.0'		
	6.0							
▽	7.0							153-SB-072-0608 collected from 7.0-7.5' bgs @9:35
						7.8 - 8.0' : No recovery		
	8.0	S-3		4.0		8.0 - 10.0' FILL: Brown fine to medium sand; loose, wet		
	9.0							153-SB-072-0810 collected from 9.0-9.5' bgs @9:40
	10.0					10.0 - 11.3' PT: Peat		
	11.0							
						11.3 - 12.0' SM: Light gray silty fine to medium sand; end of boring at 12.0'		
	12.0							

PREPARED BY: MS
CHECKED BY: JB

Honeywell Study Area - 5

LOCATION: Site 153, Morris Canal, Jersey City, NJ
PROJECT NO: 3480050136
BORING ID: 153-SB-073
DATE BEGAN: 5/20/11
DATE FINISHED: 5/20/11
INSPECTOR: M. Daly/ T. Giouzelis
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 6610DT
SAMPLING TOOL: 2" diameter macrocore
COMPLETION DEPTH: 12.0' bgs
GW DEPTH: 6.0' bgs
DRILLER: Ed Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	N/A	2.5		0.0 - 0.3' ASPHALT	N/A	
						0.3 - 1.8' FILL: Orange/brown mixed with dark brown fine to medium silty sand, some coal, brick, and coal, trace fine glass-like material; moist		153-SB-073-0002 collected from 1.0-1.5' bgs @9:45
	1.0							
	2.0					1.8 - 2.5' FILL: Degraded brick		153-SB-073-0204 collected from 2.0-2.5' bgs @9:50
	3.0					2.5 - 4.0' No recovery		
	4.0	S-2		3.0		4.0 - 4.3' FILL: Orange red fine to medium silty sand		153-SB-073-0406 collected from 4.0-4.5' bgs @9:55
						4.3 - 4.5' FILL: Dark gray fine to medium silty sand, cinders		
	5.0					4.5 - 7.0' FILL: Reddish brown fine to medium sand; wet at 6.0'		
▽	6.0							153-SB-073-0608 collected from 6.0-6.5' bgs @10:00
	7.0					7.0 - 8.0' : No recovery		
	8.0	S-3		4.0		8.0 - 8.8' FILL: Reddish brown fine to medium sand, trace fine to medium gravel		
						8.8 - 10.5' PT: Peat		153-SB-073-0810 collected from 8.0-8.5' bgs @10:05
	9.0							
	10.0							
	11.0					10.5 - 11.0' OH: Dark brown silty clay; firm		
						11.0 - 12.0' SM: Brown fine to medium silty sand, trace clay and organics; end of boring at 12.0'		
	12.0							

PREPARED BY: MS
CHECKED BY: JB

Honeywell Study Area - 5

LOCATION: Site 153, Morris Canal, Jersey City, NJ
PROJECT NO: 3480050136
BORING ID: 153-SB-074
DATE BEGAN: 5/20/11
DATE FINISHED: 5/20/11
INSPECTOR: M. Daly/ T. Giouzelis
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 6610DT
SAMPLING TOOL: 2" diameter macrocore
COMPLETION DEPTH: 12.0' bgs
GW DEPTH: 6.0' bgs
DRILLER: Ed Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	N/A	2.0		0.0 - 0.3' ASPHALT	N/A	
						0.3 - 1.8' FILL: Reddish brown silt, some fine sand, trace brick and coal; firm, moist		
	1.0					1.8 - 2.0' FILL: Dark gray fine to medium silty sand, cinder, coal; dense. moist		153-SB-074-0002 collected from 1.5-2.0' bgs @11:30
	2.0					2.0 - 4.0' No recovery		
	3.0							
	4.0	S-2		3.0		4.0 - 4.3' FILL: Light brown fine to medium sand		
						4.3 - 4.5' FILL: Wood		153-SB-074-0406 collected from 4.5-5.0' bgs @11:35
	5.0					4.5 - 7.0' FILL: Reddish brown fine to medium sand; loose, wet		
	6.0							153-SB-074-0608 collected from 6.5-7.0' bgs @11:40
	7.0					7.0 - 8.0' No recovery		
	8.0	S-3		4.0		8.0 - 10.0' FILL: Reddish brown fine to medium sand; very loose, wet		153-SB-074-0810 collected from 8.5-9.0' bgs @11:45
	9.0							
	10.0					10.0 - 11.0' OH: Light gray clay, some silt, organic material		153-SB-074-1012 collected from 10.0-10.5' bgs @11:50
	11.0					11.0 - 12.0' PT: Peat; end of boring at 12.0'		
	12.0							

PREPARED BY: MS
CHECKED BY: JB

Honeywell Study Area - 5

LOCATION: Site 153, Morris Canal, Jersey City, NJ
PROJECT NO: 3480050136
BORING ID: 153-SB-075
DATE BEGAN: 5/20/11
DATE FINISHED: 5/20/11
INSPECTOR: M. Daly/ T. Giouzelis
DRILLING CO: B&B Drilling
DRILLING METHOD: Hand Auger
DRILL EQUIP: Hand Auger
SAMPLING TOOL: Hand Auger
COMPLETION DEPTH: 3.0' bgs
GW DEPTH: Not encountered
DRILLER: Ed Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	N/A	3.0		0.0 - 0.3' MULCH	N/A	
						0.3 - 1.0' TOPSOIL		
	1.0					1.0 - 3.0' FILL: Dark gray fine to medium sand, fine to medium gravel, cinders, trace coal; end of boring at 3.0'		153-SB-075-0002 collected from 1.0-1.5' bgs @10:20
	2.0							153-SB-075-0203 collected from 2.5-3.0' bgs @10:25
	3.0							

PREPARED BY: MS
CHECKED BY: JB

Honeywell Study Area - 5

LOCATION: Site 153, Morris Canal, Jersey City, NJ
PROJECT NO: 3480050136
BORING ID: 153-SB-076
DATE BEGAN: 5/20/11
DATE FINISHED: 5/20/11
INSPECTOR: M. Daly/ T. Giouzelis
DRILLING CO: B&B Drilling
DRILLING METHOD: Hand Auger
DRILL EQUIP: Hand Auger
SAMPLING TOOL: Hand Auger
COMPLETION DEPTH: 3.0' bgs
GW DEPTH: Not encountered
DRILLER: Ed Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	N/A	3.0		0.0 - 0.3' MULCH	N/A	
						0.3 - 1.0' TOPSOIL		
	1.0					1.0 - 3.0' FILL: Dark gray fine to medium sand, fine to medium gravel, cinders, trace coal; end of boring at 3.0'		153-SB-076-0002 collected from 1.5-2.0' bgs @10:30
	2.0							153-SB-076-0203 collected from 2.5-3.0' bgs @10:35
	3.0							

PREPARED BY: MS
CHECKED BY: JB

Honeywell Jersey City

LOCATION: Site 153
PROJECT NO: 3480130371
BORING ID: 153-SB-101
DATE BEGAN: 5/2/14
DATE FINISHED: 5/2/14
INSPECTOR: Telly Giouzelis
DRILLING CO: B&B
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 12.0ft bgs
GW DEPTH: NE
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.0		0.0 - 0.5' ASPHALT	NA	
	1.0					0.5 - 3.0' FILL: Dark brown fine to medium SILTY SAND		
	2.0							153-SB-101-0204 (2.0-2.5) at 9:50
	3.0					3.0 - 4.0' No Recovery		
	4.0	S-2	NA	3.0		4.0 - 7.0' FILL: Light brown fine SAND, fine gravel; moist	NA	153-SB-101-0406 (4.0-4.5) at 9:55
	5.0							
	6.0							153-SB-101-0608 (6.0-6.5) at 10:40
	7.0					7.0 - 8.0' No Recovery		
	8.0	S-3	NA	2.0		8.0 - 10.0' FILL: Light orange fine SILTY SAND	NA	153-SB-101- 0810 (8.0-8.5) at 11:15
	9.0					10.0 - 12.0' No Recovery		
	10.0							
	11.0							
	12.0					End of boring at 12.0ft bgs.		

PREPARED BY: JA
CHECKED BY: KK

Honeywell Jersey City

LOCATION: Site 153
PROJECT NO: 3480130371
BORING ID: 153-SB-102
DATE BEGAN: 5/2/14
DATE FINISHED: 5/2/14
INSPECTOR: Telly Giouzelis
DRILLING CO: B&B
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 12.0ft bgs
GW DEPTH: 9.0ft bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.5		0.0 - 0.5' ASPHALT	NA	
						0.5 - 3.5' FILL: Light brown SAND, silt, fine to coarse gravel, trace glass		153-SB-102-0204 (2.0-2.5) at 11:45
	3.5					3.5 - 4.0' No Recovery		
	4.0	S-2	NA	3.5		4.0 - 7.5' FILL: Light gray SAND, coal ash, wood	NA	153-SB-102-0406 (4.0-4.5) at 12:40 153-SB-102-0406 (4.0-4.5) at 12:40 DP 153-SB-102-0608 (6.0-6.5) at 13:15
	7.5					7.5 - 8.0' No Recovery		
	8.0	S-3	NA	3.0		8.0 - 11.0' FILL: Black SILTY SAND, coal ash, wood. Wet at 9.0ft bgs.	NA	153-SB-102-0810 (8.0-8.5) at 13:45
	11.0					11.0 - 12.0' No Recovery		
	12.0					End of boring at 12.0ft bgs.		

PREPARED BY: JA
CHECKED BY: KK

Honeywell Jersey City

LOCATION: Site 153
PROJECT NO: 3480130371
BORING ID: 153-SB-103
DATE BEGAN: 5/5/12
DATE FINISHED: 5/5/14
INSPECTOR: Telly Giouzelis
DRILLING CO: B&B
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 12.0ft bgs
GW DEPTH: 8.0ft bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.5		0.0 - 0.5' ASPHALT	NA	
						0.5 - 3.5' FILL: Brown SILTY SAND, fine to coarse gravel		
	1.0							
	2.0							153-SB-103-0204 (2.0-2.5) at 8:35
	3.0							
						3.5 - 4.0' No Recovery		
	4.0	S-2	NA	3.5		4.0 - 7.5' FILL: Light brown SILT, fine to medium sand; very moist	NA	153-SB-103-0406 (4.0-4.5) at 8:40
	5.0							
	6.0							153-SB-103-0608 (6.0-6.5) at 8:45
	7.0							
						7.5 - 8.0' No Recovery		
	8.0	S-3	NA	2.0		8.0 - 10.0' FILL: Light brownish to gray SILT, trace gravel. Wet at 8.0ft bgs.	NA	153-SB-103-0810 (8.0-8.5) at 8:48
	9.0					10.0 - 12.0' No Recovery		
	10.0							
	11.0							
	12.0					End of boring at 12.0ft bgs.		

PREPARED BY: JA
CHECKED BY: KK

Honeywell Jersey City

LOCATION: Site 153
PROJECT NO: 3480130371
BORING ID: 153-SB-104
DATE BEGAN: 5/5/14
DATE FINISHED: 5/5/14
INSPECTOR: Telly Giouzelis
DRILLING CO: B&B
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 16.0ft bgs
GW DEPTH: 7.5ft bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.5		0.0 - 0.5' ASPHALT	NA	
	1.0					0.5 - 3.5' FILL: Light gray COAL ASH, glass, brick		153-SB-104-0002 (1.0-1.5) at 7:35
	2.0							
	3.0							153-SB-104-0204 (3.0-3.5) at 7:38
						3.5 - 4.0' No Recovery		
	4.0	S-2	NA	3.5		4.0 - 7.5' FILL: Blackish gray SAND, fine to coarse gravel, coal ash. Wet at 7.5ft bgs.	NA	
	5.0							153-SB-104-0406 (5.0-5.5) at 7:45
	6.0							
	7.0							153-SB-104-0608 (7.0-7.5) at 7:50
						7.5 - 8.0' No Recovery		
	8.0	S-3	NA	4.0		8.0 - 12.0' OL: Black CLAYEY SILT	NA	
	9.0							153-SB-104-0810 (9.0-9.5) at 7:55
	10.0					12.0 - 14.0' OL: Black CLAYEY SILT		
	11.0							153-SB-104-1012 (11.0-11.5) at 8:00
	12.0	S-4	NA	1.0			NA	153-SB-104-1214 (12.0-12.5) at 8:15
	13.0							
	14.0					End of boring at 14.0ft bgs.		

PREPARED BY: JA
CHECKED BY: KK

Honeywell Jersey City

LOCATION: Site 153
PROJECT NO: 3480130371
BORING ID: 153-SB-105
DATE BEGAN: 5/5/14
DATE FINISHED: 5/5/14
INSPECTOR: Telly Giouzelis
DRILLING CO: B&B
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 12.0ft bgs
GW DEPTH: NE
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.5		0.0 - 0.5' ASPHALT	NA	
						0.5 - 3.5' FILL: Brownish gray SAND, coal ash, glass		153-SB-105-0102 (0.5-1.0) at 10:20
	1.0							153-SB-105-0102 (1.0-1.5) at 10:22
	2.0							153-SB-105-0203 (2.0-2.5) at 10:24
	3.0							
						3.5 - 4.0' No Recovery		
	4.0	S-2	NA	4.0		4.0 - 8.0' FILL: Light brown SILT, fine to coarse sand; very moist	NA	153-SB-105-0406 (4.0-4.5) at 10:28
	5.0							
	6.0							153-SB-105-0608 (6.0-6.5) at 10:45
	7.0							
	8.0					End of boring at 8.0ft bgs		

PREPARED BY: JA
CHECKED BY: KK

Honeywell Jersey City

LOCATION: Site 153
PROJECT NO: 3480130371
BORING ID: 153-SB-106
DATE BEGAN: 6/12/14
DATE FINISHED: 6/12/14
INSPECTOR: Telly Giouzelis
DRILLING CO: B&B
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 4.0ft bgs
GW DEPTH: NE
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	4.0		0.0 - 0.5' ASPHALT	NA	
						0.5 - 4.0' FILL: Light brown SILT and SAND, fine to coarse gravel		153-SB-106-0001 (0.5-1.0) at 11:10
	1.0							153-SB-106-0102 (1.0-1.5) at 11:30
	2.0							
	3.0							
	4.0					End of boring at 4.0ft bgs.		

PREPARED BY: JA
CHECKED BY: KK

Honeywell Jersey City

LOCATION: Site 153
PROJECT NO: 3480130371
BORING ID: 153-SB-107
DATE BEGAN: 6/12/14
DATE FINISHED: 6/12/14
INSPECTOR: Telly Giouzelis
DRILLING CO: B&B
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 8.0ft bgs
GW DEPTH: 8.0ft bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	4.0		0.0 - 0.5' ASPHALT	NA	
						0.5 - 4.0' FILL: Light brown SILTY SAND, crushed concrete, trace glass		153-SB-107-0001(0.5-1.0) at 13:30
	1.0							153-SB-107-0102 (1.0-1.5) at 13:22
	2.0							153-SB-107-0203 (2.0-2.5) at 13:44
	3.0							
	4.0	S-2	NA	4.0		4.0 - 8.0' FILL: Light gray SAND, coal ash, wood; wet at 8.0ft bgs.	NA	153-SB-107-0406 (4.0-4.5) at 14:00
	5.0							
	6.0							153-SB-107-0608 (6.0-6.5) at 14:25
	7.0							
	8.0					End of boring at 8.0ft bgs.		

PREPARED BY: JA
CHECKED BY: KK

Honeywell Jersey City

LOCATION: Site 153
PROJECT NO: 3480130371
BORING ID: 153-SB-108
DATE BEGAN: 6/13/14
DATE FINISHED: 6/13/14
INSPECTOR: Telly Giouzelis
DRILLING CO: B&B
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 4.0ft bgs
GW DEPTH: NE
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.0		0.0 - 0.5' ASPHALT	NA	
						0.5 - 1.0' FILL: Yellow orange stain; suspect C.O.P.R.		153-SB-10-0001 (0.5-1.0) at 8:25
	1.0					1.0 - 3.0' FILL: Light brown SAND, coal ash		153-SB-10-0102 (1.0-1.5) at 8:27
	2.0							
	3.0					3.0 - 4.0' No Recovery		
	4.0					End of boring at 4.0ft bgs.		

PREPARED BY: JA
CHECKED BY: KK

Honeywell Jersey City

LOCATION: Site 153
PROJECT NO: 3480130371
BORING ID: 153-SB-109
DATE BEGAN: 6/13/14
DATE FINISHED: 6/13/14
INSPECTOR: Telly Giouzelis
DRILLING CO: B&B
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 8.0ft bgs
GW DEPTH: NE
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.5		0.0 - 0.5' ASPHALT	NA	
						0.5 - 3.5' FILL: Dark brown SILTY SAND, coal, glass		153-SB-109-0001 (0.5-1.0) at 10:48
	1.0							153-SB-109-0102 (1.0-1.5) at 10:49
	2.0							153-SB-109-0203 (2.0-2.5) at 10:55
	3.0							
						3.5 - 4.0' No Recovery		
	4.0	S-2	NA	4.0		4.0 - 8.0' FILL: Brown SILT, fine to medium sand, brick	NA	153-SB-109-0405 (4.0-4.5) at 10:58
	5.0							
	6.0							
	7.0							
	8.0					End of boring at 8.0ft bgs.		

PREPARED BY: JA
CHECKED BY: KK

Honeywell Jersey City

LOCATION: Site 153
PROJECT NO: 3480130371
BORING ID: 153-SB-110
DATE BEGAN: 6/13/14
DATE FINISHED: 6/13/14
INSPECTOR: Telly Giouzellis
DRILLING CO: B&B
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 8.0ft bgs
GW DEPTH: NE
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	4.0		0.0 - 0.5' ASPHALT	NA	
						0.5 - 4.0' FILL: Dark brown SILTY SAND, gravel, coal, glass		153-SB-110-0001 (0.5-1.0) at 11:20
	1.0							153-SB-110-0102 (1.0-1.5) at 11:22
	2.0							153-SB-110-0203 (2.0-2.5) at 11:25
	3.0							
	4.0	S-2	NA	4.0		4.0 - 8.0' FILL: Brown SILT, fine to medium sand, trace coal	NA	153-SB-110-0406 (4.0-4.5) at 11:30
	5.0							
	6.0							153-SB-110-0608 (6.0-6.5) at 11:45
	7.0							
	8.0					End of boring 8.0ft bgs.		

PREPARED BY: JA
CHECKED BY: KK

Honeywell Jersey City

LOCATION: Site 153
PROJECT NO: 3480130371
BORING ID: 153-SB-111
DATE BEGAN: 6/13/14
DATE FINISHED: 6/13/14
INSPECTOR: Telly Giouzelis
DRILLING CO: B&B
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 8.0ft bgs.
GW DEPTH: 8.0ft bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.5		0.0 - 0.5' ASPHALT	NA	
						0.5 - 3.5' FILL: Dark brown fine SILT, fine sand and gravel		153-SB-111-0001 (0.5-1.0) at 12:05
	1.0							153-SB-111-0102 (1.0-1.5) at 12:10
	2.0							153-SB-111-0203 (2.0-2.5) at 12:13
	3.0							
						3.5 - 4.0' No Recovery		
	4.0	S-2	NA	4.0		4.0 - 8.0' FILL: Light brown SILT, fine sand and gravel; moist	NA	153-SB-111-0406 (4.0-4.5) at 12:15
	5.0							
	6.0							153-SB-111-0608 (6.0-6.5) at 12:18
	7.0							
	8.0					End of boring at 8.0ft bgs.		

PREPARED BY: JA
CHECKED BY: KK

Honeywell Jersey City

LOCATION: Site 153
PROJECT NO: 3480130371
BORING ID: 153-SB-112
DATE BEGAN: 7/24/14
DATE FINISHED: 7/24/14
INSPECTOR: Telly Giouzelis
DRILLING CO: B&B
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 12.0ft bgs
GW DEPTH: NE
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	4.0		0.0 - 0.5' ASPHALT	NA	
						0.5 - 4.0' FILL: Light gray fine to medium SAND, coal wood		153-SB-112-0002 (1.0-1.5) at 11:45
	1.0							
	2.0							153-SB-112-0204 (2.0-2.5) at 11:55
								153-SB-112-0204 (2.0-2.5) at 11:56 DP
	3.0							
	4.0	S-2	NA	4.0		4.0 - 8.0' FILL: Brown SILT, fine to medium sand, trace gravel	NA	153-SB-112-0406 (4.0-4.5) at 12:05
	5.0							
	6.0							
	7.0							
								153-SB-112-0608 (7.5-8.0) at 12:10
	8.0	S-3	NA	3.5		8.0 - 11.5' FILL: Light brown SILT, fine to medium sand	NA	
	9.0							
	10.0							
								153-SB-112-1012 (10.5-11.0) at 12:20
	11.0					11.5 - 12.0' No Recovery		
						End of boring at 12.0ft bgs.		
	12.0							

PREPARED BY: JA
CHECKED BY: KK

Honeywell Jersey City

LOCATION: Site 153
PROJECT NO: 3480130371
BORING ID: 153-SB-113
DATE BEGAN: 7/24/14
DATE FINISHED: 7/24/14
INSPECTOR: Gordon Blewett
DRILLING CO: B&B
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 12.0ft bgs
GW DEPTH: 8.0ft bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.5		0.0 - 0.5' ASPHALT	NA	
	1.0					0.5 - 3.5' FILL: Brown fine to medium SAND, brick, coal ash		153-SB-0002 (1.5-2.0) at 12:30
	2.0							
	3.0							153-SB-0204 (2.5-3.0) at 12:35
						3.5 - 4.0' No Recovery		
	4.0	S-2	NA	3.0		4.0 - 7.0' FILL: Brownish grey fine to medium SAND, coal ash	NA	153-SB-0406 (4.5-5.0) at 12:40
	5.0							153-SB-0406 (4.5-5.0) at 12:42 DP
	6.0							
	7.0							153-SB-0608 (6.5-7.0) at 12:45
						7.0 - 8.0' No Recovery		
	8.0	S-3	NA	3.0		8.0 - 11.0' FILL: Light brown, fine to medium SAND; wet at 8.0ft bgs.	NA	
	9.0							153-SB-0810 (8.5-9.0) at 12:50
	10.0							153-SB-1012 (10.0-10.5) at 12:55
	11.0					11.0 - 12.0' No Recovery		
	12.0					End of boring at 12.0ft bgs.		

PREPARED BY: JA
CHECKED BY: KK

Honeywell Jersey City

LOCATION: Site 153
PROJECT NO: 3480130371
BORING ID: 153-SB-114
DATE BEGAN: 7/24/14
DATE FINISHED: 7/24/14
INSPECTOR: Telly Giouzelis
DRILLING CO: B&B
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 12.0ft bgs
GW DEPTH: 8.0ft bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.5		0.0 - 0.5' ASPHALT	NA	
						0.5 - 3.5' FILL: Brownish gray fine to coarse SAND, coal ash, brick		153-SB-114-0002 (1.0-1.5) at 13:10
	1.0							
	2.0							153-SB-114-0204 (2.0-2.5) at 13:15
	3.0							
						3.5 - 4.0' No Recovery		
	4.0	S-2	NA	4.0		4.0 - 8.0' FILL: Light gray fine to medium SILTY SAND, brick, concrete; wet at 8.0ft bgs.	NA	153-SB-114-0406 (4.0-4.5) at 13:20
	5.0							
	6.0							
								153-SB-114-0608 (6.5-7.0) at 13:22
	7.0							
	8.0	S-3	NA	3.0		8.0 - 11.0' FILL: Light brown fine to medium SAND; wet	NA	153-SB-114-0810 (8.0-8.5) at 13:25
	9.0							
	10.0							
						11.0 - 12.0' No Recovery		153-SB-114-1012 (10.5-11.0) at 13:28
	11.0							
						End of boring at 12.0ft bgs.		
	12.0							

PREPARED BY: JA
CHECKED BY: KK

Honeywell Jersey City

LOCATION: Site 153
PROJECT NO: 3480130371
BORING ID: 153-SB-115
DATE BEGAN: 7/24/14
DATE FINISHED: 7/24/14
INSPECTOR: Telly Giouzelis
DRILLING CO: B&B
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6610 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 12.0ft bgs
GW DEPTH: 8.0ft bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.5		0.0 - 0.5' ASPHALT	NA	
						0.5 - 3.5' FILL: Dark brown SILT, fine to medium sand, fine to medium gravel		153-SB-115-0002 (1.5-2.0) at 13:40
	1.0							
	2.0							153-SB-115-0204 (2.5-3.0) at 13:42
	3.0							
						3.5 - 4.0' No Recovery		
	4.0	S-2	NA	3.0		4.0 - 7.0' FILL: Light brown SILT, fine sand and gravel; moist. Wet at 8.0ft bgs.	NA	153-SB-115-0406 (4.0-4.5) at 13:45
	5.0							
	6.0							
								153-SB-115-0608 (6.5-7.0) at 13:48
	7.0					7.0 - 8.0' No Recovery		
	8.0	S-3	NA	3.0		8.0 - 11.0' FILL: Light brown fine to medium SAND; wet	NA	
	9.0							153-SB-115-0810 (8.5-9.0) at 13:50
	10.0							153-SB-115-1012 (10.0-10.5) at 13:55
						11.0 - 12.0' No Recovery		
	11.0							
						End of boring at 12.0ft bgs.		
	12.0							

PREPARED BY: JA
CHECKED BY: KK

APPENDIX E

MONITORING WELL/TEMPORARY WELL POINT RECORDS

New Jersey State Department of Environmental Protection
Bureau of Water Systems and Well Permitting
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201011711

WELL PERMIT

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit

Certifying Driller: H. ROBERT SEYBOLD, MASTER LICENSE # 0001612

Permit Issued to: B & B DRILLING INC

Company Address: BOX 8 RT 206 NETCONG, NJ 07857

PROPERTY OWNER

Name: REGINAL REALTY CO. C/O LANGER TRANS

Organization: REGINAL REALTY CO.

Address: 420 ROUTE 440

City: Jersey City State: New Jersey Zip Code: 07305

PROPOSED WELL LOCATION

Facility Name: LANGER TRANS

Address: 320 RT 440

County: Hudson Municipality: Jersey City Lot: 1 Block: 1288.2

Easting (X): 603498 Northing (Y): 683174
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: 153-MW-05

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: MONITORING

Other Use(s):

Diameter (in.): 2

Regulatory Program Requiring Wells/Borings:

Depth (ft.): 16

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Hollow Stem Augers

Attachments:

SPECIFIC CONDITIONS/REQUIREMENTS

Approval Date: September 23, 2010
Expiration Date: September 23, 2011

Approved by the authority of:
Bob Martin
Commissioner

John Fields, Acting Bureau Chief
Bureau of Water Systems and Well Permitting

New Jersey State Department of Environmental Protection
Bureau of Water Systems and Well Permitting
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201011711

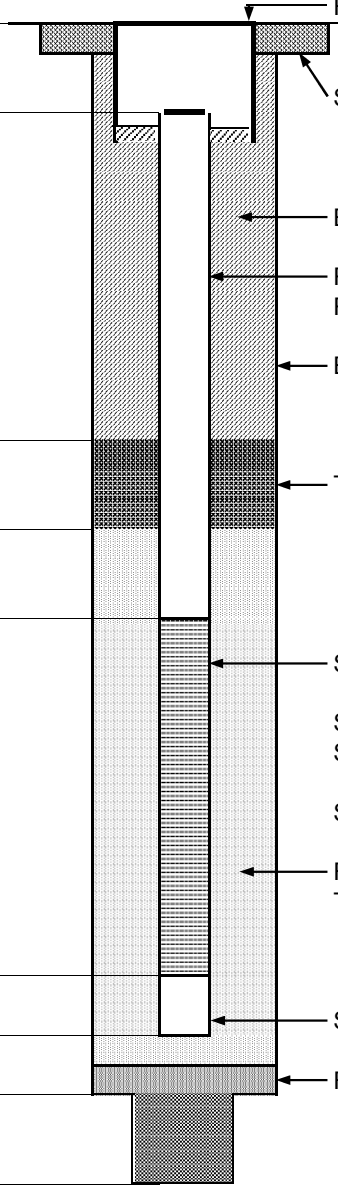
WELL PERMIT

DEVIATION INFORMATION	
Purpose:	
Unusual Conditions:	
Reason for Deviation:	
Proposed Well Construction	

GENERAL CONDITIONS/REQUIREMENTS
A copy of this permit shall be kept at the worksite / on the property and shall be exhibited upon request. [N.J.A.C. 7:9D-1]
A well record must be submitted by the well driller to the Bureau of Water Systems and Well Permitting. Unless prior written approval is obtained from the Bureau of Water Systems and Well Permitting the well record shall be submitted electronically through the New Jersey Department of Environmental Protection's Regulatory Services Portal Submit Well Record: within ninety (90) days after the well is completed.[N.J.A.C. 7:9D-1]
All well drilling/pump installation activities shall comply with N.J.A.C. 7:9D-1 et seq. [N.J.A.C. 7:9D-1]
For this permit to remain valid, the well approved in this permit shall be constructed within one year of the effective date of the permit. [N.J.A.C. 7:9D-1]
If the pump capacity applied for is less than 70 gpm, no subsequent increase to 70 gpm or more shall be made without prior approval of the Bureau of Water Systems and Well Permitting. [N.J.A.C. 7:9D-1]
If the use of the well is to be changed a well permit for the proposed use of the well shall be submitted for review and approval. [N.J.A.C. 7:9D-1]
If you or a future property owner intend to redesignate this well as a Category 1 well (domestic, non-public, community water supply or public non-community water supply wells), the well must be constructed as a Category 1 well per the Well Construction and Abandonment Regulations at N.J.A.C. 7:0D-1.1 et seq. In addition, if the current or future property owner intends to have this well redesignated as a community water supply well, the well must be constructed by a Master well driller, which would include having a Master well driller on-site at all times during construction of the well, as specified in the Well Construction and Abandonment Regulations. Otherwise, the New Jersey Department of Environmental Protection will not allow the well to be redesignated, and a new well would have to be installed. [N.J.A.C. 7:9D-1.7((a))1i]
In accepting this permit the Property Owner and Driller agree to abide by the following terms and conditions [N.J.A.C. 7:9D-1]
In the event that this well is not constructed the well driller shall notify the Bureau of Water Systems and Well Permitting of the permit cancellation. Unless prior written approval is obtained from the Bureau of Water Systems and Well Permitting the Cancellation notification shall be submitted electronically through the New Jersey Department of Environmental Protection's Regulatory Services Portal Submit Well Permit Cancellation : by the expiration date of this permit.[N.J.A.C. 7:9D-1]
In the event this well is abandoned, the Owner or Well driller shall assume full responsibility for having the well decommissioned in a manner satisfactory to the New Jersey Department of Environmental Protection in accordance with the provisions of N.J.A.C. 7:9D-1 et seq. [N.J.A.C. 7:9D-1]
The granting of this permit shall not be construed in any way to affect the title or ownership of property, and shall not make the New Jersey Department of Environmental Protection or the State a party in any suit or question of ownership of property. [N.J.A.C. 7:9D-1]
The issuance of this permit shall not be deemed to affect in any way action by the New Jersey Department of Environmental Protection on any future application. [N.J.A.C. 7:9D-1]
This permit conveys no rights, either expressed, or implied to divert water. [N.J.A.C. 7:9D-1]
This permit does not waive the obtaining of Federal or other State or local Government consent when necessary. This permit is not valid and no work shall be undertaken until such time as all other required approvals and permits have been obtained. [N.J.A.C. 7:9D-1]
This permit is NONTRANSFERABLE [N.J.A.C. 7:9D]
This well shall not be used for the supply of potable / drinking water. [N.J.A.C. 7:9D-1]

Mactec Engineering and Consulting, Inc.		FLUSHMOUNT OVERBURDEN WELL/PIEZOMETER
Project: Honeywell SA-5 Site 153	**Number:** 3480050164	**153-MW-05**
Client: Honeywell	**Date:** 10/5/2010	**Subcontractor:** B & B Drilling Inc.
Drilling Method: Hollow Stem Auger		**Measuring Point**
Development Method: Whale Pump		**Type:** Top Of Riser
Bucking Posts:		**Elevation (ft):**

Item	Depth, below Measuring Point (ft)	Elevation (ft)	Description	
Grade	NA	-	Flushmount Diameter:	8.0"
Riser Pipe	0.25		Surface Seal Type:	Concrete
			Backfill/Grout Type:	Cement/Bentonite Grout Seal
			Riser Pipe Type:	PVC Flush Thread
			Riser Pipe ID:	2.0"
			Borehole Diameter:	7.0"
Top of Seal	1		Type of Seal:	Hydrated Powder
Top of Filter Pack	4.0			
Top of Screen	5.0		Screen Type:	PVC Machine Slotted
			Screen ID:	2.0"
			Screen Slot Size:	0.010"
			Screen Length:	7.0'
			Filter/Sand Pack Type:	#1 Sand
Base of Screen	12.0			
End Cap	12.0		Sump:	NA
Drilled Depth	12.0		Fallback/Backfill:	NA
Total Depth	12.0			



Notes:

MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION

Name of Owner: REGINAL REALTY CO. C/O LANGER TRANS.
Name of Facility: LANGER TRANS
Location: 320 ROUTE 440, JERSEY CITY, NEW JERSEY
NJDEP SRP PI: G000008767

CERTIFICATION

Well Permit Number: E201011711 **Owner's Well Number** 153-MW-05
Well Completion Date: October 5, 2010 **Lithologic Log:**

Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	0.25
Total Depth of Well to the nearest 1/2 foot:	12.0
Depth to Top of Screen (or Top of Open Hole) From Top of Casing (one-hundredth of a foot):	5.0
Screen Length (or length of open hole) in feet:	7.0
Screen or Slot Size:	0.010"
Screen or Slot Material:	PVC
Casing Material: (PVC, Steel or Other-Specify):	PVC
Casing Diameter (inches):	2
Static Water Level From Top of Casing at the Time of Installation (one-hundredth of a foot):	7.45
Yield (gallons per minute):	Approx. 0.5 gpm
Development Technique (specify):	Pump
Length of Time Well is Developed/Pumped or Bailed:	1 Hours 0 Minutes

Authentication

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Technical Certification:

Margaret E. Bonaker — Margaret E. Bonaker

Name (Type or Print) **Signature**

PA - PG 002487G

Certification or License No.

Seal

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: Reginal Realty Co. C/O Langer Trans

Name of Facility: Langer Trans

Location: 320 Route 440, Jersey City, New Jersey 07305

Case Number(s): _____ ISRA Case# _____ (UST #, ISRA #, Incident #, or EPA #)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number: E201011711
(This number must be permanently affixed to the well casing.)

Owners Well Number (As shown on application or plans): 153-MW-05

Geographic Coordinate NAD 83 (to nearest 1/10 of second):

Longitude: West 74°05'53.6"W Latitude: North 40°42'29.7"N

New Jersey State Plane Coordinates NAD 83 to nearest 10 feet:

North 683167.8 East 603501.1

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 11.12

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

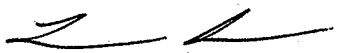
On Site Benchmark P.k. Disk # 999 NGVD 29 ELEV. 10.20 (from OPUS using local CORS Stations,)

Significant observations and notes: _____

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

SEAL



PROFESSIONAL LAND SURVEYOR'S SIGNATURE

4/27/11
DATE

MICHAEL F. BURNS, PLS NJ LAND SURVEYOR LICENSE # 34841
PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER
(Please print or type)

MASER CONSULTING P.A., 100 AMERICAN METRO BOULEVARD, SUITE 152, HAMILTON, NJ, 08619, 609-587-8200
PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-019/153-TWP-001
DATE BEGAN: 3/15/10
DATE FINISHED: 3/15/10
INSPECTOR: J. Bacchus
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 16 ft bgs
GW DEPTH: 4 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.25		0.0 - 0.8' ASPHALT	0	Augered through asphalt
	1.0					0.8 - 1.0' FILL: Brown fine to medium sand, some gravel; loose, dry		
	2.0					1.0 - 4.0' FILL: Black fine to medium clinker, some fine gravel, trace concrete and brick; loose, moist from 3' bgs		Sample collected 153-SB-019-0002 from 1.0-1.5' bgs @0830
	3.0							Sample collected 153-SB-019-0204 from 3.0-3.5' bgs @0835
	4.0	S-2	NA	3.0		4.0 - 7.0' FILL: Dark brown fine brick, fine to coarse sand, some fine clinker and gravel; loose, wet	0	
	5.0							Sample collected 153-SB-019-0406 from 4.5-5.0' bgs @0840
	6.0							Sample collected 153-SB-019-0608 from 6.0-6.5' bgs @0845
	7.0					7.0 - 8.0' No recovery		
	8.0	S-3	NA	4.0		8.0 - 11.0' FILL: Dark brown fine brick and fine to course sand, some fine clinker and gravel; loose, wet	0	
	9.0							Sample collected 153-SB-019-0810 from 9.0-9.5' bgs @0850
	10.0							
	11.0					11.0 - 12.0' OL: Black silty clay; very soft, loose		Sample collected 153-SB-019-1012 from 11.5-12.0' bgs @0855
	12.0	S-4	NA	4.0		12.0 - 14.0' SM: Brown silty sand, trace clay lenses; medium density, wet	0	
	13.0							Sample collected 153-SB-019-1214 from 12.5-13.0' bgs @0900; HOLD
	14.0					14.0 - 16.0' SP: Reddish brown fine to medium sand, trace silt; loose, wet; end of boring at 16.0' bgs		Convert to 153-TWP-0001
	15.0							
	16.0							

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-015/153-TWP-002
DATE BEGAN: 3/16/10
DATE FINISHED: 3/16/10
INSPECTOR: J. Bacchus
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6615
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 28 ft bgs
GW DEPTH: 4.0 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	2.5		0.0 - 0.5' ASPHALT	0	Augered through asphalt
	1.0					0.5 - 0.8' FILL: Brown fine to medium sand and fine gravel; loose, dry		Sample collected 153-SB-015-0002 from 1.0-1.5' bgs @0800
	2.0					0.8 - 2.5' FILL: Black fine to coarse sand, fine clinker, trace gravel, and silt; loose, dry		
	3.0					2.5 - 4.0' No recovery		Sample collected 153-SB-015-0204 from 2.0-2.5' bgs @0805
	4.0	S-2	NA	3.0		4.0 - 7.0' FILL: Black fine to medium clinker, fine to coarse sand, fine to medium gravel and brick, trace coal and silt; loose, wet	0	Sample collected 153-SB-015-0406 from 4.0-4.5' bgs @0810
	5.0							
	6.0							Sample collected 153-SB-015-0608 from 6.5-7.0' bgs @0815
	7.0					7.0 - 8.0' No recovery		
	8.0	S-3	NA	4.0		8.0 - 12.0' FILL: Black/dark gray fine to coarse sand, fine to medium clinker, some fine to medium gravel, trace silt and coal; medium density, wet; trace yellowish brown granular COPR material from 10.0-12.0' bgs	0	Driller had difficulty getting the macrocore down the borehole for 8-12' bgs run
	9.0							
	10.0							Sample collected 153-SB-015-0810 from 9.0-9.5' bgs @0830
	11.0					12.0 - 12.2' FILL: Black/dark gray fine to coarse sand, fine to medium clinker, some fine to medium gravel, trace silt and coal; loose, wet		
	12.0	S-4	NA	4.0		12.2 - 15.8' CL: Dark grayish brown silty clay, trace fine to medium sand and gravel; soft, wet	0	Sample collected 153-SB-015-1012 from 11.0-11.5' bgs @0835
	13.0							
	14.0							

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-015/153-TWP-002
DATE BEGAN: 3/16/10
DATE FINISHED: 3/16/10
INSPECTOR: J. Bacchus
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe 6615
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 28 ft bgs
GW DEPTH: 4.0 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	15.0					15.8 - 16.0' SM: Reddish brown silty fine sand, trace fine gravel; medium density, wet		Sample collected 153-SB-015-1214 from 12.5-13.0' bgs @0845
	16.0	S-5	NA	4.0		16.0 - 20.0' SM: Reddish brown silty fine sand; medium density, wet	0	Sample collected 153-SB-015-1416 from 15.0-15.5' bgs @0850
	17.0							
	18.0							Sample collected 153-SB-015-1618 from 16.0-16.5' bgs @0855
	19.0							
	20.0	S-6	NA	4.0		20.0 - 22.0' ML: Reddish brown fine sandy silt, trace clay; trace fine gravel from 21.6-21.7' bgs; soft, wet	0	Sample collected 153-SB-015-1820 from 18.0-18.5' bgs @0900,DUP @0905
	21.0							Sample collected 153-SB-015-2022 from 20.5-21.0' bgs @0910
	22.0					22.0 - 23.7' SW: Reddish brown fine gravelly sand; medium density, wet		Sample collected 153-SB-015-2224 from 22.5-23.0' bgs @0915
	23.0					23.7 - 24.0' SM: Reddish brown silty fine sand; medium density, wet		Sample collected 153-SB-015-2426 from 24.5-25.0' bgs @0920; HOLD
	24.0	S-7	NA	4.0		24.0 - 28.0' SM: Reddish brown silty fine sand, trace clay from 25.6-26.0' bgs; loose, wet; end of boring 28' bgs	0	Boring converted to 153-TWP-002 using 1" diameter, 0.010 slot PVC; screened 2-12' bgs
	25.0							
	26.0							DTW= 4.27' bgs collected grab sample @1000
	27.0							
	28.0							

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-012/153-TWP-003
DATE BEGAN: 3/16/10
DATE FINISHED: 3/16/10
INSPECTOR: J. Bacchus
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 20 ft bgs
GW DEPTH: 4.0 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	NA	3.0		0.0 - 0.5' ASPHALT	0	
	1.0					0.5 - 1.0' FILL: Brown fine to coarse sand and fine to medium gravel; loose, dry		Sample collected 153-SB-012-0002 from 1.0-1.5' bgs @1210
	2.0					1.0 - 3.0' FILL: Black fine to coarse sand and fine clinker; ash from 1.8-2.2' bgs, some yellowish brown granular COPR material from 2.5-2.7' bgs; moist from 2.8' bgs		Sample collected 153-SB-012-0204 from 2.5-3.0' bgs @1215
	3.0					3.0 - 4.0' No recovery		
▽	4.0	S-2	NA	3.0		4.0 - 7.0' FILL: Fine to coarse black sand and fine clinker, trace fine gravel and silt; loose, wet	0	Sample collected 153-SB-012-0406 from 4.5-5.0' bgs @1220
	5.0							Sample collected 153-SB-012-0608 from 6.0-6.5' bgs @1225
	6.0							
	7.0					7.0 - 8.0' No recovery		Sample collected 153-SB-012-0810 from 8.5-9.0' bgs @1230
	8.0	S-3	NA	3.0		8.0 - 10.0' FILL: Black fine to coarse sand and fine clinker, trace fine gravel and silt, some fine brick; loose, wet	0	Sample collected 153-SB-012-1012 from 10.5-11.0' bgs @1235
	9.0							
	10.0					10.0 - 11.0' CL: Black silty clay, trace fine sand; soft, wet		Sample collected 153-SB-012-1214 from 13.5-14.0' bgs @1240
	11.0					11.0 - 12.0' No recovery		
	12.0	S-4	NA	2.5		12.0 - 12.2' CL: Black silty clay, trace fine sand; soft, wet	0	Sample collected 153-SB-012-1416 from 14.0-14.5' bgs @1245
	13.0					12.2 - 13.0' SP: Brown fine to medium sand, trace silt; medium density, wet		
						13.0 - 14.5' SM: Reddish brown silty fine		

PREPARED BY: MS
CHECKED BY: BS

Honeywell Jersey City, SA-5

SITE INFO: Site 153
PROJECT NO: 3480050164
BORING ID: 153-SB-012/153-TWP-003
DATE BEGAN: 3/16/10
DATE FINISHED: 3/16/10
INSPECTOR: J. Bacchus
DRILLING CO: B & B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: Geoprobe
SAMPLING TOOL: Macrocore
COMPLETION DEPTH: 20 ft bgs
GW DEPTH: 4.0 ft bgs
DRILLER: Gordon Blewitt
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	14.0	S-5	NA	3.0		sand, some gray silty COPR material from 13.5-13.8' bgs; medium density, wet	0	Sample collected 153-SB-012-1618 from 16.5-17' bgs @1250
	15.0					14.5 - 16.0' No recovery		Sample collected 153-SB-012-1820 from 18.5-19.0' bgs @1255
	16.0					16.0 - 19.0' SM: Reddish brown silty fine sand; loose, wet		Boring converted to 153-TWP-003 using 1" diameter 0.010, slot PVC; screened 2-12'
	17.0							
	18.0							DTW= 3.53' bgs, grab sample collected @13:15
	19.0					19.0 - 20.0' No recovery; end of boring @20' bgs		
	20.0							

PREPARED BY: MS
CHECKED BY: BS

Honeywell Study Area - 5

LOCATION: Site 153, Morris Canal, Jersey City, NJ
PROJECT NO: 3480050136
BORING ID: 153-TWP-04
DATE BEGAN: 9/26/11
DATE FINISHED: 9/26/11
INSPECTOR: Telly Giouzelis
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 6610DT
SAMPLING TOOL: 4' X 2" diameter macrocore
COMPLETION DEPTH: 14.0' bgs
GW DEPTH: 6.0' bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	N/A	4.0		0.0 - 0.5' ASPHALT	N/A	
						0.5 - 3.0' FILL: Black fine to medium sand, some red fine to medium sand, trace coal and brick		
	3.0					3.0 - 4.0' FILL: Red fine to medium sand		
	4.0	S-2		4.0		4.0 - 6.0' FILL: Red fine to medium sand, trace silt and fine to medium gravel		
	6.0					6.0 - 8.0' FILL: Brown fine to medium sand; loose, wet		
	8.0	S-3		2.0		8.0 - 10.0' FILL: Brown fine to medium sand, black silt; wet		
	10.0					10.0 - 12.0' No recovery		
	12.0	S-4		2.0		12.0 - 14.0' OL: Black silt; end of boring at 14.0'		
	14.0							

PREPARED BY: MS
CHECKED BY: JB

Honeywell Study Area - 5

LOCATION: Site 153, Morris Canal, Jersey City, NJ
PROJECT NO: 3480050136
BORING ID: 153-TWP-05
DATE BEGAN: 9/26/11
DATE FINISHED: 9/26/11
INSPECTOR: Telly Giouzelis
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 6610DT
SAMPLING TOOL: 4' X 2" diameter macrocore
COMPLETION DEPTH: 13.0' bgs
GW DEPTH: 6.0' bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	N/A	3.0		0.0 - 0.5' FILL: Gravel	N/A	
	1.0					0.5 - 2.0' FILL: Brown silt, fine sand, gravel		
	2.0					2.0 - 3.0' No recovery		
	3.0					3.0 - 4.0' FILL: Dark brown silty sand		
	4.0	S-2		4.0		4.0 - 6.0' FILL: Brown fine silty sand, clinker, gravel; moist		
	5.0							
	6.0					6.0 - 8.0' FILL: Light orange silt, some fine to medium gravel, yellow/white nodules (potential COPR); wet		
	7.0							
	8.0	S-3		4.0		8.0 - 9.5' FILL: Light orange silt, some fine to medium gravel		
	9.0							
	10.0					9.5 - 13.0' OL: Black clayey silt, trace organic material; end of boring at 13.0'		
	11.0							
	12.0	S-4		1.0				
	13.0							

PREPARED BY: MS
CHECKED BY: JB

Honeywell Study Area - 5

LOCATION: Site 153, Morris Canal, Jersey City, NJ
PROJECT NO: 3480050136
BORING ID: 153-TWP-06
DATE BEGAN: 9/26/11
DATE FINISHED: 9/26/11
INSPECTOR: Telly Giouzelis
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 6610DT
SAMPLING TOOL: 4' X 2" diameter macrocore
COMPLETION DEPTH: 12.0' bgs
GW DEPTH: 6.0' bgs
DRILLER: Gordon Blewett
NORTH:
EAST:

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	S-1	N/A	4.0		0.0 - 0.5' TOPSOIL	N/A	
						0.5 - 3.0' FILL: Light brown fine to medium sand		
	1.0							
	2.0							
	3.0					3.0 - 4.0' FILL: Light gray coal, ash, glass		
	4.0	S-2		4.0		4.0 - 6.0' FILL: Brown silt, sand, fine to medium gravel		
	5.0							
▽	6.0					6.0 - 8.0' FILL: Light brown silt, fine to medium sand; wet		
	7.0							
	8.0	S-3		4.0		8.0 - 10.0' FILL: Light brown/light gray silt, trace fine sand; wet		
	9.0							
	10.0					10.0 - 12.0' OL: Black clayey silt, organics; end of boring at 12.0'		
	11.0							
	12.0							

PREPARED BY: MS
CHECKED BY: JB

APPENDIX F

GROUNDWATER SAMPLING FORMS

MACTEC

Groundwater Sampling Form

Job Name: SA-5 Site 153 | Task: 2100.16 | Well Number: 153-MW-2
Job Number: 3480110255 | Well Type: Monitor [x] Other [ ]
Well Material: PVC [x] Stainless Steel [ ] Steel [ ] Other [ ]

WELL PURGING INFORMATION

PURGE VOLUME
Low Flow Method: [ ]
3 to 5 Volume Purge Method: [x]
Number of Well Volumes to be Purged: 3
Casing Diameter (D in Inches): 4
Total Depth of Casing (TD in feet BTOC): 21.55
Screen Interval in Feet (BTOC) from _____ to _____

PURGE METHOD
Bailer - Type: _____
Submersible [ ] Centrifugal [ ]
Bladder [ ] Peristaltic [x]

PUMP INTAKE SETTING
Near Bottom [ ] Near Top [ ]
Center [x]
Other [ ] _____

PURGE VOLUME CALCULATIONS
(___ - ___) x ___^{2} x ___ x 0.0408 = 22.75 Gallons
TD WL D No. Volumes Calculated Purge Volume

Purge Water Disposal: San. Sewer [ ] Drum [ ] Type _____ Other [x]
Storm Sewer [ ] Size _____

INSTRUMENT IDENTIFICATION RECORD AND FIELD MEASUREMENTS

Instrument Type: Horiba U-22 | Depth to Water: 9.92 | Time: 9:48 | Date: 4/26/2011
Serial Number: 8888 | Depth to Bottom of Well: 21.55 | PID Reading (inside of Casing): NM
For Calibration Information, See Instrument Calibration Record Sheet Dated: 4/26/2011

FIELD PARAMETER MEASURMENTS

Recorded By: _____ (Signature) | Sampled By: BS | Purge Start Time: 9:48

Time	Minutes Elapsed	Rate [x] lpm [ ] gpm	Purged [x] L [ ] Gal	pH (S.U.)	Cond. (ms/cm)	Turbidity (NTUs)	Diss. O_2 (mg/L)	Temp (°C)	Salinity (%)	Redox (mV)	Depth to Water	Comments
9:50	0	0.5	0	7.04	0.771	57.1	3.39	14.2	0	18	10.41	
10:00	10	0.5	5	6.91	0.772	25.4	0.24	14.68	0	-79	11.65	
10:10	20	0.5	10	6.92	0.763	6.1	0.00	14.98	0	-105	11.64	
10:20	30	0.5	15	6.93	0.76	6.2	0.00	14.94	0	-110	11.64	
10:30	40	0.5	20	6.94	0.758	1.8	0.00	14.95	0	-113	11.64	
10:33	43	1	23	6.96	0.756	0.7	0.00	15.01	0	-117	11.69	
10:34	Sample											

Note: > = Greater Than < = Less Than NM = Not Measured EF = Equipment Failure

OBSERVATIONS DURING WELL PURGING

Well Condition: Good | Odor: Fuel oil
Color of GW: Clear | Other: _____
Sample Time: 10:34 | Additional Samples: [ ] Sample Time: _____
Sample ID: 153-MW-2-042611 | Sample ID: _____

MACTEC

Groundwater Sampling Form

Job Name: SA-5 Site 153 | Task: 2100 | Well Number: 153-MW-2
Job Number: 3480050164 | Well Type: Monitor [x] Other [ ]
Well Material: PVC [x] Stainless Steel [ ] Steel [ ] Other [ ]

WELL PURGING INFORMATION

PURGE VOLUME
Low Flow Method: [ ]
3 to 5 Volume Purge Method: [x]
Number of Well Volumes to be Purged: 3
Casing Diameter (D in Inches): 4
Total Depth of Casing (TD in feet BTOC): 21.75
Screen Interval in Feet (BTOC) from _____ to _____

PURGE METHOD
Bailer - Type: _____
Submersible [ ] Centrifugal [ ]
Bladder [ ] Peristaltic [x]

PUMP INTAKE SETTING
Near Bottom [ ] Near Top [ ]
Center [x]
Other [ ] _____

PURGE VOLUME CALCULATIONS
(TD - WL) x D² x No. Volumes x 0.0408 = 21.67 Gallons (Calculated Purge Volume)

Purge Water Disposal: San. Sewer [ ] Drum [ ] Type _____ Other [x]
Storm Sewer [ ] Size _____

INSTRUMENT IDENTIFICATION RECORD AND FIELD MEASUREMENTS

Instrument Type: Horiba U-22 | Depth to Water: 10.68 | Time: 12:15 | Date: 10/19/2010
Serial Number: 10306 | Depth to Bottom of Well: 21.75 | PID Reading (inside of Casing): NM
For Calibration Information, See Instrument Calibration Record Sheet Dated: 10/19/2010

FIELD PARAMETER MEASURMENTS

Recorded By: _____ (Signature) | Sampled By: BS | Purge Start Time: 12:17

Time	Minutes Elapsed	Rate [x] lpm [ ] gpm	Purged [x] L [ ] Gal	pH (S.U.)	Cond. (ms/cm)	Turbidity (NTUs)	Diss. O_2 (mg/L)	Temp (°C)	Salinity (%)	Redox (mV)	Depth to Water	Comments
12:20	0	0.5	0	7.05	0.849	858	0.00	18.68	0	-70	11.09	
12:30	10	0.5	5	7.03	0.776	145	0.00	18.45	0	-135	12.39	
12:40	20	0.5	10	7.06	0.745	33.7	0.00	18.38	0	-150	12.38	
12:50	30	0.5	15	7.09	0.731	15.1	0.00	18.35	0	-156	12.38	
13:00	40	0.5	20	7.1	0.729	11.3	0.00	18.3	0	-158	12.38	
13:05	45	0.5	22.5	7.1	0.728	18.4	0.00	18.36	0	-159	12.38	
13:07	Sample											
13:25				7.12	0.738	39.8	0	18.45	0	-147	12.3	

Note: > = Greater Than < = Less Than NM = Not Measured EF = Equipment Failure

OBSERVATIONS DURING WELL PURGING

Well Condition: Good | Odor: Fuel oil
Color of GW: Clear | Other: _____
Sample Time: 13:07 | Additional Samples: [ ] Sample Time: _____
Sample ID: 153-MW-2-101910 | Sample ID: _____

MACTEC

Groundwater Sampling Form

Job Name: SA-5 Site 153 | Task: 2100.16 | Well Number: 153-MW-5
Job Number: 3480110255 | Well Type: Monitor [x] Other [ ]
Well Material: PVC [x] Stainless Steel [ ] Steel [ ] Other [ ]

WELL PURGING INFORMATION

PURGE VOLUME
Low Flow Method: [ ]
3 to 5 Volume Purge Method: [x]
Number of Well Volumes to be Purged: 3
Casing Diameter (D in Inches): 2
Total Depth of Casing (TD in feet BTOC): 11.95
Screen Interval in Feet (BTOC) from _____ to _____

PURGE METHOD
Bailer - Type: _____
Submersible [ ] Centrifugal [ ]
Bladder [ ] Peristaltic [x]

PUMP INTAKE SETTING
Near Bottom [ ] Near Top [ ]
Center [x]
Other [ ] _____

PURGE VOLUME CALCULATIONS
(TD - WL) x D² x No. Volumes x 0.0408 = 2.75 Gallons (Calculated Purge Volume)

Purge Water Disposal: San. Sewer [ ] Drum [ ] Type _____ Other [x]
Storm Sewer [ ] Size _____

INSTRUMENT IDENTIFICATION RECORD AND FIELD MEASUREMENTS

Instrument Type: Horiba U-22 | Depth to Water: 6.34 | Time: 9:13 | Date: 4/26/2011
Serial Number: 8888 | Depth to Bottom of Well: 11.95 | PID Reading (inside of Casing): NM
For Calibration Information, See Instrument Calibration Record Sheet Dated: 4/26/2011

FIELD PARAMETER MEASURMENTS

Recorded By: _____ (Signature) | Sampled By: BS | Purge Start Time: 9:14

Time	Minutes Elapsed	Rate [ ] lpm [x] gpm	Purged [ ] L [x] Gal	pH (S.U.)	Cond. (ms/cm)	Turbidity (NTUs)	Diss. O_2 (mg/L)	Temp (°C)	Salinity (%)	Redox (mV)	Depth to Water	Comments
9:15	0	0.2	0	6.56	0.769	20.3	0.26	11.18	0	-70	6.5	
9:20	5	0.2	1	6.34	0.781	9.8	0.00	11.06	0	-60	6.91	
9:25	10	0.2	2	6.13	0.763	4.7	0.00	11.18	0	-53	7.2	
9:30	15	0.2	3	5.97	0.76	3.7	0.00	11.31	0	-55	7.2	
9:32	Sample											

Note: > = Greater Than < = Less Than NM = Not Measured EF = Equipment Failure

OBSERVATIONS DURING WELL PURGING

Well Condition: Good | Odor: Fuel oil
Color of GW: Clear | Other: _____
Sample Time: 9:32 | Additional Samples: [ ] Sample Time: _____
Sample ID: 153-MW-5-042611 | Sample ID: _____

MACTEC

Groundwater Sampling Form

Job Name: SA-5 Site 153 | Task: 2100 | Well Number: 153-MW-5
Job Number: 3480050164 | Well Type: Monitor [x] Other [ ]
Well Material: PVC [x] Stainless Steel [ ] Steel [ ] Other [ ]

WELL PURGING INFORMATION

PURGE VOLUME
Low Flow Method: [ ]
3 to 5 Volume Purge Method: [x]
Number of Well Volumes to be Purged: 3
Casing Diameter (D in Inches): 2
Total Depth of Casing (TD in feet BTOC): 12.25
Screen Interval in Feet (BTOC) from _____ to _____

PURGE METHOD
Bailer - Type: _____
Submersible [ ] Centrifugal [ ]
Bladder [ ] Peristaltic [x]

PUMP INTAKE SETTING
Near Bottom [ ] Near Top [ ]
Center [x]
Other [ ] _____

PURGE VOLUME CALCULATIONS
(TD - WL) x D² x No. Volumes x 0.0408 = Calculated Purge Volume
(_____ - _____) x _____² x _____ x 0.0408 = 2.5 Gallons

Purge Water Disposal: San. Sewer [ ] Drum [ ] Type _____ Other [x]
Storm Sewer [ ] Size _____

INSTRUMENT IDENTIFICATION RECORD AND FIELD MEASUREMENTS

Instrument Type: Horiba U-22 | Depth to Water: 7.05 | Time: 10:50 | Date: 10/19/2010
Serial Number: 10306 | Depth to Bottom of Well: 12.25 | PID Reading (inside of Casing): NM
For Calibration Information, See Instrument Calibration Record Sheet Dated: 10/19/2010

FIELD PARAMETER MEASURMENTS

Recorded By: _____ (Signature) | Sampled By: BS | Purge Start Time: 11:14

Time	Minutes Elapsed	Rate [ ] lpm [x] gpm	Purged [ ] L [x] Gal	pH (S.U.)	Cond. (ms/cm)	Turbidity (NTUs)	Diss. O_2 (mg/L)	Temp (°C)	Salinity (%)	Redox (mV)	Depth to Water	Comments
11:15	0	0.1	0	6.17	0.684	486	4.01	18.62	0	-22	7.31	
11:25	10	0.1	1	6.74	0.599	513	0.00	18.73	0	-51	7.6	
11:35	20	0.1	2	6.85	0.659	381	0.00	18.84	0	-64	7.84	
11:45	30	0.1	3	6.95	0.646	202	0.00	19.01	0	-76	7.84	
11:47	Sample											
11:47	MS/	MSD										
11:58	Sample	DUP										
12:08				6.85	0.648	109	0	19.36	0	-81	7.84	

Note: > = Greater Than < = Less Than NM = Not Measured EF = Equipment Failure

OBSERVATIONS DURING WELL PURGING

Well Condition: Good-New | Odor: Fuel oil
Color of GW: Clear | Other: _____
Sample Time: 11:47 | Additional Samples: [x] Sample Time: 11:58
Sample ID: 153-MW-5-101910 | Sample ID: DUP, MS, MSD

MACTEC

Groundwater Sampling Form

Job Name SA-5 Site 153 **Task** 2100 **Well Number** 153-MW-A13

Job Number 3480050164 **Well Type** Monitor ☑ Other ☐

Well Material PVC ☑ Stainless Steel ☐ Steel ☐ Other ☐

WELL PURGING INFORMATION

PURGE VOLUME

Low Flow Method: ☑

3 to 5 Volume Purge Method: ☐

Number of Well Volumes to be Purged: _____

Casing Diameter (D in Inches) _____

Total Depth of Casing (TD in feet BTOC): _____

Screen Interval in Feet (BTOC) from _____ to _____

PURGE METHOD

Bailer - Type: _____

Submersible ☐ Centrifugal ☐

Bladder ☐ Peristaltic ☑

PUMP INTAKE SETTING

Near Bottom ☐ Near Top ☐

Center ☑

Other ☐ _____

PURGE VOLUME CALCULATIONS

(_____ - _____) x _____ ^{2} x _____ x 0.0408 = _____ Gallons

TD WL D No. Volumes Calculated Purge Volume

Purge Water Disposal: San. Sewer ☐ Drum ☐ Type _____ Other ☑

Storm Sewer ☐ Size _____

INSTRUMENT IDENTIFICATION RECORD AND FIELD MEASUREMENTS

Instrument Type: Horiba U-22 Depth to Water: 5.67 Time: 9:40 Date: 10/19/2010

Serial Number: 10326 Depth to Bottom of Well: 9.36 PID Reading (inside of Casing): NM

For Calibration Information, See Instrument Calibration Record Sheet Dated: 10/19/2010

FIELD PARAMETER MEASURMENTS

Recorded By: _____ (Signature) Sampled By: MD Purge Start Time: 9:46

Time	Minutes Elapsed	Rate ☑ lpm ☐ gpm	Purged ☑ L ☐ Gal	pH (S.U.)	Cond. (ms/cm)	Turbidity (NTUs)	Diss. O_2 (mg/L)	Temp (°C)	Salinity (%)	Redox (mV)	Depth to Water	Comments
9:48	0	0.2	1	6.01	1.21	45.7	3.47	18.2	0.1	114	5.68	
9:53	5	0.2	2	6.72	99.9	1.9	0.52	20.58	0.1	92	6.37	
9:58	10	0.2	3	6.87	99.9	0	0.12	20.9	4	80	6.8	
10:03	15	0.2	4	6.97	99.9	0	0.09	21.1	4	-23	7.13	
10:08	20	0.2	5	7.01	1.4	0	0	20.09	0.2	-116	7.23	
10:13	25	0.2	6	6.96	1.19	0.5	5.02	19.06	0.1	-96	7.22	
10:18	30	0.2	7	6.99	1.22	11.3	7.1	18.45	0.1	-78	7.28	
10:23	35	0.2	8	6.95	1.23	13.9	0.9	20.27	0.1	-72	7.51	
10:28	40	0.2	9	7.05	1.25	1.3	1.27	20.92	0.1	-168	7.9	
10:33	45	0.2	10	7.13	99.9	0	0.4	20.54	4	-189	8.03	
10:38	50	0.2	11	7.17	99.9	0	0.2	20.43	4	-208	8.14	
10:43	55	0.2	12	7.26	99.9	0	0	20.85	4	-223	8.32	

Note: > = Greater Than < = Less Than NM = Not Measured EF = Equipment Failure

OBSERVATIONS DURING WELL PURGING

Well Condition OK Odor: NA

Color of GW: Clear Other: _____

Sample Time: 10:45 Additional Samples: ☐ Sample Time: _____

Sample ID: 153-MW-A13-101910 Sample ID: _____

MACTEC

Groundwater Sampling Form

Job Name SA-5 Site 153 **Task** 2100 **Well Number** 153-MW-A15

Job Number 3480050164 **Well Type** Monitor ☑ Other ☐

Well Material PVC ☑ Stainless Steel ☐ Steel ☐ Other ☐

WELL PURGING INFORMATION

PURGE VOLUME

Low Flow Method: ☑

3 to 5 Volume Purge Method: ☐

Number of Well Volumes to be Purged: _____

Casing Diameter (D in Inches) _____

Total Depth of Casing (TD in feet BTOC): _____

Screen Interval in Feet (BTOC) from _____ to _____

PURGE METHOD

Bailer - Type: _____

Submersible ☐ Centrifugal ☐

Bladder ☐ Peristaltic ☑

PUMP INTAKE SETTING

Near Bottom ☐ Near Top ☐

Center ☑

Other ☐ _____

PURGE VOLUME CALCULATIONS

(_____ - _____) x _____ ^{2} x _____ x 0.0408 = _____ Gallons

TD WL D No. Volumes Calculated Purge Volume

Purge Water Disposal: San. Sewer ☐ Drum ☐ Type _____ Other ☑

Storm Sewer ☐ Size _____

INSTRUMENT IDENTIFICATION RECORD AND FIELD MEASUREMENTS

Instrument Type: Horiba U-22 Depth to Water: 8.18 Time: 11:41 Date: 10/19/2010

Serial Number: 10326 Depth to Bottom of Well: 9.31 PID Reading (inside of Casing): NM

For Calibration Information, See Instrument Calibration Record Sheet Dated: 10/19/2010

FIELD PARAMETER MEASURMENTS

Recorded By: _____ (Signature) Sampled By: MD Purge Start Time: 11:40

Time	Minutes Elapsed	Rate ☑ lpm ☐ gpm	Purged ☑ L ☐ Gal	pH (S.U.)	Cond. (ms/cm)	Turbidity (NTUs)	Diss. O_2 (mg/L)	Temp (°C)	Salinity (%)	Redox (mV)	Depth to Water	Comments
11:42	0	0.3	0	7.07	2.25	120	0.71	19.61	0.1	-120	8.2	
11:47	5	0.3	1.5	6.67	9.09	77.1	0.05	19.91	0.5	-107	8.19	
11:52	10	0.3	3	6.59	32.5	42.5	0	20.43	2.1	-99	8.21	
11:57	15	0.3	4.5	6.56	30	15.9	0	20.5	1.9	-95	8.22	
12:02	20	0.3	6	6.56	15.9	2.4	0	20.51	0.9	-92	8.22	
12:07	25	0.3	7.5	6.55	15.1	0	0	20.44	0.9	-89	8.22	
12:12	30	0.3	9	6.55	14.8	0	0	20.6	0.7	-88	8.22	
12:15	Sample											
12:15	MS/	MSD										
12:18	DUP											

Note: > = Greater Than < = Less Than NM = Not Measured EF = Equipment Failure

OBSERVATIONS DURING WELL PURGING

Well Condition: Missing bolt Odor: NA

Color of GW: Clear Other: _____

Sample Time: 12:15 Additional Samples: ☑ Sample Time: _____

Sample ID: 153-MW-A15-101910 Sample ID: DUP, MS, MSD

MACTEC

Groundwater Sampling Form

Job Name: SA-5 Site 153 | Task: 2100 | Well Number: 153-MW-A13
Job Number: 3480050164 | Well Type: Monitor ☑ Other ☑
Well Material: PVC ☑ Stainless Steel ☑ Steel ☑ Other ☑

WELL PURGING INFORMATION

PURGE VOLUME
Low Flow Method: ☑
3 to 5 Volume Purge Method: ☑
Number of Well Volumes to be Purged: _____
Casing Diameter (D in Inches): 211
Total Depth of Casing (TD in feet BTOC): _____
Screen Interval in Feet (BTOC) from _____ to _____

PURGE METHOD
Bailer - Type: _____
Submersible ☑ Centrifugal ☑
Bladder ☑ Peristaltic ☑

PUMP INTAKE SETTING
Near Bottom ☑ Near Top ☑
Center ☑
Other ☐ _____

PURGE VOLUME CALCULATIONS
(TD - WL) x D^2 x No. Volumes x 0.0408 = Calculated Purge Volume: _____ Gallons

Purge Water Disposal: San. Sewer ☑ Drum ☑ Type _____ Other ☑
Storm Sewer ☑ Size _____

INSTRUMENT IDENTIFICATION RECORD AND FIELD MEASUREMENTS

Instrument Type: Horiba U-22 | Depth to Water: 5.4 | Time: 9:40 | Date: 9/26/2011
Serial Number: 7169 | Depth to Bottom of Well: 9.35 | PID Reading (inside of Casing): NM
For Calibration Information, See Instrument Calibration Record Sheet Dated: 9/26/2011

FIELD PARAMETER MEASURMENTS

Recorded By: _____ (Signature) | Sampled By: MD | Purge Start Time: 12:05

Time	Minutes Elapsed	Rate ☑ lpm ☐ gpm	Purged ☑ L ☐ Gal	pH (S.U.)	Cond. (ms/cm)	Turbidity (NTUs)	Diss. O_2 (mg/L)	Temp (°C)	Salinity (%)	Redox (mV)	Depth to Water	Comments
12:06	0	0.2	0	6.68	0.733	81.4	0.3	26.42	0	50	5.54	
12:11	5	0.2	1	6.88	0.722	26.4	0	24.48	0	27	5.9	
12:16	10	0.2	2	6.87	0.69	20.6	0	25.08	0	49	6.0	
12:21	15	0.2	3	6.86	0.68	5.5	0	25.25	0	57	6.11	
12:26	20	0.2	4	6.90	0.67	0	0	25.36	0	56	6.28	
12:31	25	0.2	5	6.93	0.66	0	0	25.69	0	55	6.38	
12:36	30	0.2	6	6.93	0.656	0	0	25.96	0	55	6.5	

Note: > = Greater Than < = Less Than NM = Not Measured EF = Equipment Failure

OBSERVATIONS DURING WELL PURGING

Well Condition: Missing bolt | Odor: NA
Color of GW: Clear | Other: _____
Sample Time: 12:40 | Additional Samples: ☑ Sample Time: _____
Sample ID: 153-MW-A13-092611 | Sample ID: _____

MACTEC

Groundwater Sampling Form

Job Name: SA-5 Site 153 | Task: 2100 | Well Number: 153-MW-A15

Job Number: 3480050164 | Well Type: Monitor [x] Other [ ]

Well Material: PVC [x] Stainless Steel [ ] Steel [ ] Other [ ]

WELL PURGING INFORMATION

PURGE VOLUME

Low Flow Method: [x]

3 to 5 Volume Purge Method: [ ]

Number of Well Volumes to be Purged: _____

Casing Diameter (D in Inches): 211

Total Depth of Casing (TD in feet BTOC): _____

Screen Interval in Feet (BTOC) from _____ to _____

PURGE METHOD

Bailer - Type: _____

Submersible [x] Centrifugal [ ]

Bladder [ ] Peristaltic [ ]

PUMP INTAKE SETTING

Near Bottom [x] Near Top [ ]

Center [ ]

Other [ ] _____

PURGE VOLUME CALCULATIONS

(_____ - _____) x _____ ^{2} x _____ x 0.0408 = _____ Gallons

TD WL D No. Volumes Calculated Purge Volume

Purge Water Disposal: San. Sewer [ ] Drum [x] Type _____ Other [x]

Storm Sewer [ ] Size _____

INSTRUMENT IDENTIFICATION RECORD AND FIELD MEASUREMENTS

Instrument Type: Horiba U-22 | Depth to Water: 7.63 | Time: 9:54 | Date: 9/26/2011

Serial Number: 7169 | Depth to Bottom of Well: 9.53 | PID Reading (inside of Casing): NM

For Calibration Information, See Instrument Calibration Record Sheet Dated: 9/26/2011

FIELD PARAMETER MEASURMENTS

Recorded By: _____ (Signature) | Sampled By: MD | Purge Start Time: 10:04

Time	Minutes Elapsed	Rate [x] lpm [ ] gpm	Purged [x] L [ ] Gal	pH (S.U.)	Cond. (ms/cm)	Turbidity (NTUs)	Diss. O_2 (mg/L)	Temp (°C)	Salinity (%)	Redox (mV)	Depth to Water	Comments
10:06	0	0.3	0	6.29	1.69	449	0	23.42	0.1	-102	7.64	
10:11	5	0.3	1.5	6.51	1.65	229	0	23.66	0.1	-115	7.65	
10:16	10	0.3	3	6.53	1.63	148	0	23.65	0.1	-110	7.62	
10:21	15	0.3	4.5	6.55	1.61	84.1	0	23.79	0.1	-117	7.64	
10:26	20	0.3	6	6.56	1.57	1.1	0	23.67	0.1	-118	7.65	
10:31	25	0.3	7.5	6.57	1.55	0	0	23.61	0.1	-118	7.65	
10:36	30	0.3	9	6.57	1.56	0	0	23.6	0.1	-117	7.65	

Note: > = Greater Than < = Less Than NM = Not Measured EF = Equipment Failure

OBSERVATIONS DURING WELL PURGING

Well Condition: no cap | Odor: NA

Color of GW: Clear | Other: _____

Sample Time: 10:40 | Additional Samples: [x] Sample Time: _____

Sample ID: 153-MW-A15-092611 | Sample ID: DUP, MS, MSD

MACTEC

Groundwater Sampling Form

Job Name SA-5 Site 153 **Task** _____ **Well Number** 153-TWP-04

Job Number _____ **Well Type** Monitor ☑ Other ☑

Well Material PVC ☑ Stainless Steel ☑ Steel ☑ Other ☑

WELL PURGING INFORMATION

PURGE VOLUME

Low Flow Method: ☑

3 to 5 Volume Purge Method: ☑

Number of Well Volumes to be Purged: _____

Casing Diameter (D in Inches) 219

Total Depth of Casing (TD in feet BTOC): _____

Screen Interval in Feet (BTOC) from _____ to _____

PURGE METHOD

Bailer - Type: _____

Submersible ☑ Centrifugal ☐

Bladder ☐ Peristaltic ☐

PUMP INTAKE SETTING

Near Bottom ☑ Near Top ☑

Center ☑

Other ☐ _____

PURGE VOLUME CALCULATIONS

(_____ - _____) x _____ ^{2} x _____ x 0.0408 = _____ Gallons

TD WL D No. Volumes Calculated Purge Volume

Purge Water Disposal: San. Sewer ☑ Drum ☑ Type _____ Other ☑

Storm Sewer ☑ Size _____

INSTRUMENT IDENTIFICATION RECORD AND FIELD MEASUREMENTS

Instrument Type: Horiba U-22 Depth to Water: 7 Time: 11:00 Date: 9/26/2011

Serial Number: 7169 Depth to Bottom of Well: 14.6 PID Reading (inside of Casing): NM

For Calibration Information, See Instrument Calibration Record Sheet Dated: 9/26/2011

FIELD PARAMETER MEASURMENTS

Recorded By: _____ (Signature) Sampled By: MD Purge Start Time: 11:06

Time	Minutes Elapsed	Rate ☑ lpm ☐ gpm	Purged ☑ L ☐ Gal	pH (S.U.)	Cond. (ms/cm)	Turbidity (NTUs)	Diss. O_2 (mg/L)	Temp (°C)	Salinity (%)	Redox (mV)	Depth to Water	Comments
11:08	0	0.4	0	6.09	0.71	873	0.7	23.67	0	-82	7.02	
11:13	5	0.4	2	6.43	0.65	579	0	22.99	0	-118	7.02	
11:18	10	0.4	4	6.36	0.638	38.3	0	22.86	0	-114	7.02	
11:23	15	0.4	6	6.43	0.634	4	0	22.86	0	-119	7.02	
11:28	20	0.4	8	6.48	0.632	0	0	22.83	0	-122	7.01	
11:33	25	0.4	10	6.51	0.628	0	0	22.81	0	-123	7.01	
11:38	30	0.4	12	6.53	0.626	0	0	22.81	0	-124	7.01	

Note: > = Greater Than < = Less Than NM = Not Measured EF = Equipment Failure

OBSERVATIONS DURING WELL PURGING

Well Condition Good Odor: NA

Color of GW: light grey; then clear Other: _____

Sample Time: 11:48 Additional Samples: ☑ Sample Time: _____

Sample ID: 153-TWP-04-092611 Sample ID: DUP, MS, MSD

MACTEC

Groundwater Sampling Form

Job Name: SA-5 Site 153 | Task: | Well Number: 153-TWP-05

Job Number: | Well Type: Monitor ☑ Other ☑

Well Material: PVC ☑ Stainless Steel ☑ Steel ☑ Other ☑

WELL PURGING INFORMATION

PURGE VOLUME

Low Flow Method: ☑

3 to 5 Volume Purge Method: ☑

Number of Well Volumes to be Purged:

Casing Diameter (D in Inches):

Total Depth of Casing (TD in feet BTOC):

Screen Interval in Feet (BTOC) from ____ to ____

PURGE METHOD

Bailer - Type:

Submersible ☑ Centrifugal ☐

Bladder ☐ Peristaltic ☐

PUMP INTAKE SETTING

Near Bottom ☐ Near Top ☐

Center ☑

Other ☐

PURGE VOLUME CALCULATIONS

(TD - WL) x D^2 x No. Volumes x 0.0408 = Calculated Purge Volume Gallons

Purge Water Disposal: San. Sewer ☑ Drum ☑ Type Other ☑

Storm Sewer ☑ Size

INSTRUMENT IDENTIFICATION RECORD AND FIELD MEASUREMENTS

Instrument Type: Horiba U-22 | Depth to Water: 7.94 | Time: 13:59 | Date: 9/26/2011

Serial Number: 7164 | Depth to Bottom of Well: 10.39 | PID Reading (inside of Casing): NM

For Calibration Information, See Instrument Calibration Record Sheet Dated: 9/26/2011

FIELD PARAMETER MEASURMENTS

Recorded By: (Signature) | Sampled By: MD | Purge Start Time: 14:07

Time	Minutes Elapsed	Rate ☑ lpm ☐ gpm	Purged ☑ L ☐ Gal	pH (S.U.)	Cond. (ms/cm)	Turbidity (NTUs)	Diss. O_2 (mg/L)	Temp (°C)	Salinity (%)	Redox (mV)	Depth to Water	Comments
14:08	0	0.3	0	6.63	1.62	977	0.21	25.4	0.1	-27	8.09	
14:13	5	0.3	1.5	6.57	1.46	55.2	0	25.54	0.1	-5	8.2	
14:18	10	0.3	3	6.6	1.46	4.7	0	25.5	0.1	-37	8.26	
14:23	15	0.3	4.5	6.61	1.53	0	0	24.81	0.1	-46	8.38	
14:28	20	0.3	6	6.61	1.6	46.1	0	24.24	0.1	-55	8.49	
14:33	25	0.3	7.5	6.63	1.63	20.3	0	24.44	0.1	-72	8.36	
14:38	30	0.3	9	6.63	1.66	0	0	24.45	0.1	-70	8.3	
14:43	35	0.3	11.5	6.63	1.67	0	0	24.4	0.1	-66	8.35	

Note: > = Greater Than < = Less Than NM = Not Measured EF = Equipment Failure

OBSERVATIONS DURING WELL PURGING

Well Condition: OK | Odor: NA

Color of GW: Clear | Other:

Sample Time: 14:08 | Additional Samples: ☑ Sample Time:

Sample ID: 153-TWP-05-092611 | Sample ID: DUP, MS, MSD

MACTEC

Groundwater Sampling Form

Job Name: SA-5 Site 153 | Task: | Well Number: 153-TWP-06

Job Number: | Well Type: Monitor ☑ Other ☑

Well Material: PVC ☑ Stainless Steel ☑ Steel ☑ Other ☑

WELL PURGING INFORMATION

PURGE VOLUME

Low Flow Method: ☑

3 to 5 Volume Purge Method: ☑

Number of Well Volumes to be Purged:

Casing Diameter (D in Inches): 211

Total Depth of Casing (TD in feet BTOC):

Screen Interval in Feet (BTOC) from ____ to ____

PURGE METHOD

Bailer - Type:

Submersible ☑ Centrifugal ☐

Bladder ☐ Peristaltic ☐

PUMP INTAKE SETTING

Near Bottom ☐ Near Top ☐

Center ☑

Other ☑

PURGE VOLUME CALCULATIONS

(TD - WL) x D^2 x No. Volumes x 0.0408 = Calculated Purge Volume Gallons

Purge Water Disposal: San. Sewer ☑ Drum ☑ Type Other ☑

Storm Sewer ☑ Size

INSTRUMENT IDENTIFICATION RECORD AND FIELD MEASUREMENTS

Instrument Type: Horiba U-22 | Depth to Water: 6.95 | Time: 13:07 | Date: 9/26/2011

Serial Number: 7169 | Depth to Bottom of Well: 12.61 | PID Reading (inside of Casing): NM

For Calibration Information, See Instrument Calibration Record Sheet Dated: 9/26/2011

FIELD PARAMETER MEASURMENTS

Recorded By: (Signature) | Sampled By: MD | Purge Start Time: 10:04

Time	Minutes Elapsed	Rate ☑ lpm ☐ gpm	Purged ☑ L ☐ Gal	pH (S.U.)	Cond. (ms/cm)	Turbidity (NTUs)	Diss. O_2 (mg/L)	Temp (°C)	Salinity (%)	Redox (mV)	Depth to Water	Comments
13:14	0	0.3	0	6.47	1.63	5999	0.6	21.54	0.1	-108	7.00	
13:19	5	0.3	1.5	6.12	1.15	83.6	0	21.42	0.1	-47	7.04	
13:24	10	0.3	3	5.94	1.12	6.1	0	21.49	0.1	-26	7.05	
13:29	15	0.3	4.5	6.04	1.18	0	0	21.46	0.1	-35	7.05	
13:34	20	0.3	6	6.17	1.21	0	0	21.52	0.1	-45	7.05	
13:39	25	0.3	7.5	6.26	1.23	0	0	21.5	0.1	-53	7.05	
13:44	30	0.3	9	6.29	1.23	0	0	21.47	0.1	-57	7.05	
13:49	35	0.3	10.5	6.32	1.24	0	0	21.44	0.1	-59	7.05	

Note: > = Greater Than < = Less Than NM = Not Measured EF = Equipment Failure

OBSERVATIONS DURING WELL PURGING

Well Condition: OK | Odor: NA

Color of GW: light grey; then clear | Other:

Sample Time: 13:45 | Additional Samples: ☑ Sample Time:

Sample ID: 153-TWP-06-092611 | Sample ID: DUP, MS, MSD

APPENDIX G

LABORATORY DATA REPORTS/ ELECTRONIC DATA DELIVERABLES (Provided on Compact Disk)

APPENDIX H

DATA VALIDATION REPORTS
(Provided on Compact Disk)

APPENDIX I

SITE 153 INTERIM REMEDIAL MEASURE REPORTS

I1: Site 153 South Lower Segment IRM Report (Honeywell, 2010)
I2: Site 153 South Upper Segment IRM Report (Honeywell, 2013)

(Provided on Compact Disk)

APPENDIX J

DRAFT MODIFIED DEED NOTICE
FOR FORMER MORRIS CANAL

DEED NOTICE

IN ACCORDANCE WITH N.J.S.A. 58:10B-13, THIS DOCUMENT IS TO BE RECORDED IN THE SAME MANNER AS ARE DEEDS AND OTHER INTERESTS IN REAL PROPERTY.

Prepared by: _____
[Signature]

_____
[425/445 Route 440 Property LLC]
[Print name below signature]

Recorded by:

_____
[Signature, Officer of County Recording Office]

_____
[Print name below signature]

DEED NOTICE CONCERNING CONTROLS INSTALLED TO CONTAIN CHROMIUM CONTAMINATION UNDERLYING PROPERTY AND RESTRICTIONS CONCERNING THE USE OF PROPERTY

This Deed Notice is made as of the ___ day of _____, 2014, by Honeywell International Inc. ("Honeywell") and its subsidiary 425/445 Route 440 Property LLC, whose post office address is 101 Columbia Road, Morristown, New Jersey 07962. Owner shall mean 425/445 Route 440 Property LLC, together with its successors and assigns, including all successors in interest in the Property which is the subject of this Deed Notice as described fully below.

1. THE PROPERTY. 425/445 Route 440 Property LLC is the current owner in fee simple of certain real property designated as Block 21902, Lot 1 and Block 26704, Lot 5 (formerly Block 1289.5, Lot E) on the tax map of the City of Jersey City, Hudson County, New Jersey (Property); the New Jersey Department of Environmental Protection (NJDEP) Program Interest Number for the contaminated site which includes this Property is Hudson County Chromate Site No. 153 Program Interest (PI) #G000008767. Portions of the Property are known as Site 153 South and Site 153 North pursuant to the Consent Decree Regarding Site 79 and 153 South and the Consent Decree Regarding Remediation of the New Jersey City University Redevelopment Area ("Consent Decrees"), which are

attached hereto and entered as orders of the Court in the following consolidated actions *JCMUA v. Honeywell International Inc.,* D.N.J., Civ. No. 05-05955; *JCIA v. Honeywell International Inc.,* D.N.J., Civ. No. 05-5993; and *Hackensack Riverkeeper, Inc. v. Honeywell International Inc.,* D.N.J., Civ. No. 06-22. The portion of the Property subject to this Deed Notice is described by metes and bounds in Exhibit A-1. The Consent Decrees restrict transfer, use and development of the Site 153 South and North portions of the Property without further remediation, pursuant to the terms of the Consent Decrees. To the extent that there is any conflict or inconsistency between the terms of this Deed Notice and the terms of the Consent Decrees, the Consent Decrees shall govern. To the extent that any action to be taken pursuant to this Deed Notice is in conflict with or inconsistent with the Consent Decrees, the Consent Decrees shall govern.

2. REMEDIATION.

i. The New Jersey Department of Environmental Protection Bureau of State Case Management was the program that was responsible for the oversight of the remediation of the Property. The matter was Case No. Hudson County Chromate Site No. 153 Program Interest (PI) # G000008767. The Property is subject to a Consent Judgment between the NJDEP and Honeywell et al. filed September 7, 2011, Superior Court of New Jersey, Chancery Division-Hudson County, Docket No. C-77-05 ("Consent Judgment"). Pursuant to Appendix F of the Consent Judgment, Site 153 is designated as a sewer site and Honeywell has responsibility for remediation of chromium-related contamination in accordance with the Sewer Protocol as specified in Appendix B of the Consent Judgment.
ii. N.J.A.C. 7:26C-7 requires the Owner, among other persons, to obtain a soil remedial action permit for the soil remedial action at the Property. That permit will contain the monitoring, maintenance and biennial certification requirements that apply to the Property.

3. SOIL AND GROUNDWATER CONTAMINATION. Honeywell, a corporation in the State of New Jersey whose post office address is 101 Columbia Road, Morristown, New Jersey 07962, is remediating the Property to address chromium-related soil and groundwater contamination. The Remedial Action Work Plan for the NJCU Remediation Area, including that portion of the Property designated as Site 153 North abutting the NJCU property was approved by NJDEP on July 26, 2007. Interim Remedial Action Work Plans for Site 153 South Lower and Upper Segments were submitted to NJDEP on October 15, 2009 and May 21, 2010, respectively. Remedial actions were further approved pursuant to the Consent Decrees. All of the remedial actions, including the interim actions, were completed in accordance with above-referenced work plans and the Consent Decrees, and meet the requirements of the Sewer Protocol as specified in the Consent Judgment. Under the Consent Decrees, the Interim Remedial Action Work Plans and the NJCU Remedial Action Work Plan, soil contamination remains in the Property at concentrations that do not allow for the unrestricted use of the Property. The soil contamination is described, including the type, concentration and specific location of such contaminants, in Exhibit B, which is attached hereto and made a part hereof. As a result of the contamination, there is a statutory requirement for this Deed Notice and

engineering controls in accordance with N.J.S.A. 58:10B-13. The remedial actions and engineering controls are further described in Exhibit C. Under the terms of the Consent Decrees and this Deed Notice, Honeywell is responsible for monitoring and maintaining the soil remediation for the Site 153 North and South portions of the Property until such time as the Property is remediated to the level that would permit the removal of this Deed Notice pursuant to the Consent Decrees. (NOTE: An institutional control for groundwater referred to as a Classification Exception Area was approved by the NJDEP on February 16, 2012.)

4. CONSIDERATION. In accordance with the NJDEP's approval of the Remedial Action Work Plans for the remediation of Hudson County Chromate Site No. 153 and in consideration of the terms and conditions of that approval, and in accordance with the Consent Decrees, and other good and valuable considerations, Owner has agreed to subject the Property to certain statutory and regulatory requirements which impose restrictions upon the use of the Property, to restrict certain uses of the Property, and to provide notice to easement holders, lessees and operators of the restrictions until the Property is further remediated and no longer must be encumbered by this Deed Notice pursuant to the terms of the Consent Decree.

5A. RESTRICTED AREAS. Due to the presence of these contaminants throughout the Property, Owner has agreed, as part of the remedial action for the Property, to restrict the use of the Property (the entire Property is also referred to as the "Restricted Area"); a narrative description of these restrictions, along with the associated monitoring and maintenance activities and the biennial certification requirements are provided in Exhibit C, which is attached hereto and made a part hereof. Owner has also agreed to maintain a list of these restrictions on site for inspection by governmental enforcement officials.

5B. RESTRICTED LAND USES. The following statutory land use restrictions apply to the Restricted Areas:

i. The Brownfield and Contaminated Site Remediation Act, N.J.S.A. 58:10B-12.g(10), prohibits the conversion of a contaminated site, remediated to non-residential soil remediation standards that require the maintenance of engineering or institutional controls, to a child care facility, or public, private, or charter school without the Department's prior written approval, unless a presumptive remedy is implemented; and

ii. The Brownfield and Contaminated Site Remediation Act, N.J.S.A. 58:10B-12.g(12), prohibits the conversion of a landfill, with gas venting systems and or leachate collection systems, to a single family residence or a child care facility without the Department's prior written approval.

5C. ENGINEERING CONTROLS. Due to the presence and concentration of these contaminants, Owner has also agreed, as part of the remedial action for the Property, to the placement of certain engineering controls on the Property. A narrative description of these engineering controls, along with the associated monitoring and maintenance

activities and the biennial certification requirements are provided in Exhibit C. Honeywell shall be responsible for monitoring and maintenance of engineering controls and the biennial certification requirements.

5D. ADDITIONAL PROVISIONS PURSUANT TO CONSENT DECREE. The clean fill, caps and asphalt cover (also referred to as the Restricted Area) constitute engineering controls that must be maintained in accordance with the New Jersey Technical Requirements for Site Remediation, N.J.A.C. § 7:26E. Future uses of the Property are limited to open space, utility corridor, transportation, roadway, crossing, or access to adjacent properties.

6A. CHANGE IN OWNERSHIP AND REZONING.

i. The Owner and the subsequent owners and lessees, shall cause all leases, grants, and other written transfers of an interest in the Property to contain a provision expressly requiring all holders thereof to take the Property subject to the restrictions contained herein and to comply with all, and not to violate any of the conditions of this Deed Notice. Nothing contained in this Paragraph shall be construed as limiting any obligation of any person to provide any notice required by any law, regulation, or order of any governmental authority.

ii. The Owner and the subsequent owners shall provide written notice to the Department of Environmental Protection on a form provided by the Department and available at www.nj.gov/srp/forms within thirty (30) calendar days after the effective date of any conveyance, grant, gift, or other transfer, in whole or in part, of the owner's interest in the Restricted Area. Any such conveyance, grant or gift must be consistent with the terms of the Consent Decrees.

iii. The Owner and the subsequent owners shall provide written notice to the Department, on a form available from the Department at www.nj.gov/srp/forms, within thirty (30) calendar days after the Owner receiving notice of rezoning of the Property to residential, Owner's petition for rezoning of the Property to residential or filing of any document initiating a rezoning of the Property to residential.

6B. SUCCESSORS AND ASSIGNS. This Deed Notice shall be binding upon Honeywell. This Deed Notice shall also be binding upon Owner and upon Owner's successors and assigns, and subsequent owners, lessees and operators while each is an owner, lessee, or operator of the Property.

7A. ALTERATIONS, IMPROVEMENTS, AND DISTURBANCES.

i. The Owner and all subsequent owners and lessees shall notify any person, including, without limitation, tenants, employees of tenants, and contractors, intending to conduct invasive work or excavate within the Restricted Areas, of the nature and location of contamination in the Restricted Areas, and, of the precautions necessary to minimize potential human exposure to contaminants.

ii. Except as provided in the Consent Decrees and Paragraph 7B, no person shall make, or allow to be made, any alteration, improvement, or disturbance in, to, or about the Restricted Area which disturbs any engineering control at the Restricted Area except as (a) permitted in the Consent Decrees and (b) without first obtaining a soil remedial action permit modification pursuant to N.J.A.C. 7:26C-7. Nothing herein shall constitute a waiver of the obligation of any person to comply with all applicable laws and regulations including, without limitation, the applicable rules of the Occupational Safety and Health Administration.

iii. Notwithstanding subparagraph 7A.ii., above, a soil remedial action permit modification is not required for any alteration, improvement, or disturbance provided that the owner, lessee or operator:

(A) Takes such action in conformance with the Consent Decrees; and

(B) Notifies NJDEP of the activity by calling the NJDEP Hotline, at 1-877-WARN-DEP or 1-877-927-6337, within twenty-four (24) hours after the beginning of each alteration, improvement, or disturbance;

(C) Notifies Honeywell of the activity by calling 855-727-2658;

(D) Restores or causes Honeywell to restore any disturbance of an engineering control to pre-disturbance conditions within sixty (60) calendar days after the initiation of the alteration, improvement or disturbance;

(E) Follows all applicable worker health and safety laws and regulations during the alteration, improvement, or disturbance, and during the restoration;

(F) Takes appropriate measures so that human exposure to contamination in excess of the applicable remediation standards does not occur; and

(G) Describes, in the next biennial certification the nature of the alteration, improvement, or disturbance, the dates and duration of the alteration, improvement, or disturbance, the name of key individuals and their affiliations conducting the alteration, improvement, or disturbance, a description of the notice the Owner gave to those persons prior to the disturbance.

7B. EMERGENCIES. In the event of an emergency which presents, or may present, an unacceptable risk to the public health and safety, or to the environment, or immediate environmental concern, see N.J.S.A. 58:10C-2, any person may temporarily breach any engineering control provided that that person complies with each of the following:

i. Immediately notifies NJDEP of the emergency, by calling the NJDEP Hotline at 1-877-WARNDEP or 1-877-927-6337;

ii. Immediately notifies Honeywell of the emergency by calling 855-727-2658;

iii. Limits both the actual disturbance and the time needed for the disturbance to the minimum reasonably necessary to adequately respond to the emergency;

iv. Implements all measures necessary to limit actual or potential, present or future risk of exposure to humans or the environment to the contamination;

v. Notifies NJDEP when the emergency or immediate environmental concern has ended by calling the NJDEP Hotline at 1-877-WARNDEP or 1-877-927-6337;

vi. Notifies Honeywell when the emergency or immediate environmental concern has ended by calling 855-727-2658; and

vii. Restores or causes Honeywell to restore the engineering control to the pre-emergency conditions as soon as possible, and provides a written report to the NJDEP within sixty (60) calendar days after completion of the restoration of the engineering control, including: (a) the nature and likely cause of the emergency, (b) the potential discharges of or exposures to contaminants, if any, that may have occurred, (c) the measures that have been taken to mitigate the effects of the emergency on human health and the environment, (d) the measures completed or implemented to restore the engineering control, and (e) the changes to the engineering control or site operation and maintenance plan to prevent recurrence of such conditions in the future.

8A. MONITORING AND MAINTENANCE OF DEED NOTICE, AND PROTECTIVENESS CERTIFICATION. Honeywell and the Owner shall monitor and maintain this Deed Notice, and certify to NJDEP on a biennial basis that the remedial action that includes this Deed Notice remains protective of the public health and safety and of the environment. The specific obligations to monitor and maintain the deed notice shall include all of the following:

i. Monitoring and maintaining this Deed Notice according to the requirements in Exhibit C, so that the remedial action that includes the Deed Notice continues to be protective of the public health and safety and of the environment;

ii. Conducting any additional remedial investigations and implement any additional remedial actions, that are necessary to correct, mitigate, or abate each problem related to the protectiveness of the remedial action for the Property prior

to the date that the certification is due to NJDEP pursuant to iii, below, so that the remedial action that includes this Deed Notice remains protective of the public health and safety and of the environment; and

iii. Certify to NJDEP as to the continued protectiveness of the remedial action that includes this Deed Notice, on a form provided by NJDEP and consistent with N.J.A.C. 7:26C-7.4(b)1, every two years on the anniversary of the date stamped on the Deed Notice that indicates when the Deed Notice was recorded or as specified in the soil remedial action permit for the Property.

8B. MONITORING AND MAINTENANCE OF ENGINEERING CONTROLS, AND PROTECTIVENESS CERTIFICATION. Honeywell and the Owner shall maintain all engineering controls at the Property and certify to the Department on a biennial basis that the remedial action of which each engineering control is a part remains protective of the public health and safety and of the environment. The specific obligations to monitor and maintain the engineering controls shall include the following:

i. Monitoring and maintaining each engineering control according to the requirements in Exhibit C, so that the remedial action that includes the engineering control continues to be protective of the public health and safety and of the environment;

ii. Conducting any additional remedial investigations and implement any additional remedial actions, that are necessary to correct, mitigate, or abate each problem related to the protectiveness of the remedial action for the Property prior to the date that the certification is due to the Department pursuant to iii, below, so that the remedial action that includes the engineering control remains protective of the public health and safety and of the environment; and

iii. Certify to NJDEP as to the continued protectiveness of the remedial action that includes the engineering control, on a form provided by NJDEP and consistent with N.J.A.C. § 7:26C-1.2 (a)1, every two years on the anniversary of the date stamped on the Deed Notice that indicates when the Deed Notice was recorded or as specified in the soil remedial action permit for the Property.

9. ACCESS. The Owner and the subsequent owners, lessees and operators agree to allow NJDEP, its agents and representatives access to the Property to inspect and evaluate the continued protectiveness of the remedial action that includes this Deed Notice and to conduct additional remediation to provide for the protection of the public health and safety and of the environment if persons responsible for monitoring the protectiveness of the remedial action fail to conduct such remediation pursuant to this Deed Notice as required by law. The Owner and the subsequent owners, lessees and operators shall also cause all leases, subleases, grants, and other written transfers of an interest in the Property to contain a provision expressly requiring that all holders thereof provide such access to the Department.

10. ENFORCEMENT OF VIOLATIONS.

i. This Deed Notice itself is not intended to create any interest in real estate in favor of the NJDEP, nor to create a lien against the Property, but merely is intended to provide notice of certain conditions and restrictions on the Property and to reflect the regulatory and statutory obligations imposed as a conditional remedial action for the Property.

ii. The restrictions provided herein may be enforceable by NJDEP against any person who violates this Deed Notice. To enforce violations of this Deed Notice, NJDEP may initiate one or more enforcement actions pursuant to N.J.S.A. 58:10-23.11 and N.J.S.A. 58:10C, and require additional remediation and assess damages pursuant to N.J.S.A. 58:10-23.11 and N.J.S.A. 58:10C.

11. SEVERABILITY. If any court of competent jurisdiction determines that any provision of this Deed Notice requires modification, such provision shall be deemed to have been modified automatically to conform to such requirements. If a court of competent jurisdiction determines that any provision of this Deed Notice is invalid or unenforceable and the provision is of such a nature that it cannot be modified, the provision shall be deemed deleted from this instrument as if the provision had never been included herein. In either case, the remaining provisions of this Deed Notice shall remain in full force and effect.

12. MODIFICATION AND TERMINATION OF DEED NOTICE

i. This Deed Notice may be terminated only upon filing of a Termination of Deed Notice, available at N.J.A.C. 7:26C Appendix C, with the office of the Register of Deeds of Hudson County, New Jersey, expressly terminating this Deed Notice.

ii. Within thirty (30) calendar days after the filing of a Termination of Deed Notice, the owner of the property shall apply to the Department for modification or termination of the soil remedial action permit pursuant to N.J.A.C. 7:26C-7.

iii. Any person may request in writing, at any time, that NJDEP modify this Deed Notice where performance of subsequent remedial actions, a change of conditions at the Property, or the adoption of revised remediation standards suggest that modification of the Deed Notice would be appropriate.

iv. Any person may request in writing, at any time, that NJDEP terminate this Deed Notice because the conditions which triggered the need for this Deed Notice are no longer applicable.

v. Any person seeking a modification of this Deed Notice must also have such modification approved by the United States District Court for the District of New Jersey pursuant to the Consent Decrees.

vi. This Deed Notice may be modified if it has first been terminated pursuant to subparagraph 12i above, and upon filing of a modified Deed Notice, executed by the Owner of the Property, in the office of the Hudson County Register, New Jersey.

13A. EXHIBIT A. Exhibit A includes the following maps of the Property and vicinity:

i. Exhibit A-1: Vicinity Map - A map that identifies by name the roads, and other important geographical features in the vicinity of the Property;

ii. Exhibit A-2: Metes and Bounds Description - A metes and bounds description of the Property, including reference to tax lot and block numbers for the Property and a Tax Map; and

iii. Exhibit A-3: Property Map - A scaled map of the Property, scaled at one inch to 200 feet or less, and if more than one map is submitted, the maps shall be presented as overlays, keyed to a base map; the map(s) shall include diagrams of major surface topographical features such as buildings, roads, and parking lots.

13B. EXHIBIT B. Exhibit B includes the following descriptions of the Restricted Areas:

i. Exhibit B-1 (Figures B-1A through B-1D): Restricted Area Maps - Maps for the Restricted Area that include, as applicable:

(A) As-built diagrams of each engineering control, including caps, fences, slurry walls, ground water monitoring wells, and ground water pumping system;

(B) As-built diagrams of any buildings, roads, parking lots and other structures that function as engineering controls; and

(C) Designation of all soil and/or sediment sample locations within the restricted areas that exceed any soil or sediment standard that are keyed into one of the tables described in the following paragraph.

ii. Exhibit B-2: Restricted Area Data Table - Table for the Restricted Area that includes:

(A) Sample location designation from Restricted Area maps (Exhibit B-1);

(B) Sample elevation based upon mean sea level;

(C) Name and chemical abstract service registry number of each contaminant with a concentration that exceeds the unrestricted use standard;

(D) The restricted and unrestricted use standards for each contaminant in the table with instructions that direct the reader to the Consent Decree for further information; and

(E) The remaining concentration of each contaminant at each sample location at each elevation.

13C. EXHIBIT C. Exhibit C includes narrative descriptions of the institutional controls and engineering controls as follows:

i. Exhibit C-1: Deed Notice as Institutional Control; Exhibit C-1 includes a narrative description of the restrictions and obligations of this Deed Notice that are in addition to those described above, as follows:

(A) General Description of the Institutional Controls:
(1) Description and estimated size of the Restricted Areas as described above;
(2) Description of the restrictions on the Property by operation of this Deed Notice and the other Institutional Controls; and
(3) The objective of the restrictions;

(B) Description of the monitoring necessary to determine whether:
(1) Any disturbances of the soil in the Restricted Areas did not result in the unacceptable exposure to the soil contamination;
(2) There have been any land use changes subsequent to the filing of this Deed Notice and the other Institutional Controls or the most recent biennial certification, whichever is more recent;
(3) The current land use on the Property is consistent with the restrictions in this Deed Notice and the other Institutional Controls;
(4) Any newly promulgated or modified requirements of applicable regulations or laws apply to the Property; and
(5) Any new standards, regulations, or laws apply to the Property that might necessitate additional sampling in order to evaluate the protectiveness of the remedial action which includes this Deed Notice and the other Institutional Controls, and conduct the necessary sampling.

(C) Description of the following items that will be included in the biennial certification:
(1) A monitoring report that describes the specific activities, pursuant to (A) and (B), above, conducted in support of the biennial certification of the protectiveness of the remedial action that includes this Deed Notice and the other Institutional Controls;
(2) Land use at the Property is consistent with the restrictions in this Deed Notice and the other Institutional Controls; and
(3) The remedial action that includes this Deed Notice and the other Institutional Controls continues to be protective of the public health and safety and of the environment.

ii. Exhibit C-2: Engineering Controls: Clean Fill, Vegetative Cover, Pavement and Access Point Warnings:

Exhibit C-2 includes a narrative description of the engineering controls as follows:

(A) General Description of the engineering control:
(1) Description of the engineering control;
(2) The objective of the engineering control; and
(3) How the engineering control is intended to function.

(B) Description of the operation and maintenance necessary to document that:
(1) Periodic inspections of each engineering control are performed in order to determine its integrity, operability, and effectiveness;
(2) Each engineering control continues as designed and intended to protect the public health and safety and the environment;
(3) Each alteration, excavation or disturbance of any engineering control is timely and appropriately addressed to maintain the integrity of the engineering control;
(4) The engineering control is being inspected and maintained and its integrity remains so that the remedial action continues to be protective of the public health and safety and of the environment;
(5) A record of the self-inspection dates, name of the inspector, results of the inspection and condition(s) of the engineering control. Sampling, for example, may be necessary if it is not possible to visually evaluate the integrity/performance of the engineering control; and
(6) Any new standards, regulations, or laws apply to the Property that might necessitate additional sampling in order to evaluate the protectiveness of the remedial action which includes this Deed Notice, and conduct the necessary sampling.

(C) Description of the following items that will be included in the biennial certification:
(1) A monitoring report that describes the specific activities, pursuant to (A) and (B), above, conducted in support of the biennial certification of the protectiveness of the remedial action that includes this Deed Notice;
(2) The engineering control continues to operate as designed; and
(3) The remedial action that includes the engineering control continues to be protective of the public health and safety and of the environment.

13D. EXHIBIT D. Consent Decrees as Institutional Controls: Exhibit D-1 includes a copy of the Consent Decree Regarding Sites 79 and 153 South. Exhibit D-2 includes a copy of the Consent Decree Regarding Remediation of the New Jersey City University Redevelopment Area.

14. SIGNATURES.

IN WITNESS WHEREOF, Owner has executed this Deed Notice as of the date first written above.

ATTEST:	425/445 Route 440 Property LLC
_____	By_____
_____	_____
[Print name and title]	[Signature]

STATE OF NEW JERSEY SS.:
COUNTY OF [where document is executed]

I certify that on _____, 2014, Maria Kaouris personally came before me, and this person acknowledged under oath, to my satisfaction, that:

(a) this person is the Remediation Manager of Route 425/445 Route 440 LLC, the corporation named in this document;

(b) this person is the attesting witness to the signing of this document by the proper corporate officer John Morris who is the Remediation Director of the corporation;

(c) this document was signed and delivered by the corporation as its voluntary act and was duly authorized;

(d) this person knows the proper seal of the corporation; and

(e) this person signed this proof to attest to the truth of these facts.

_____
[Signature]

_____
[Print name and title of attesting witness]

Signed and sworn before me on _____, 2014
_____, Notary Public

_____
[Print name and title]

EXHIBIT A

A-1 Vicinity Map
A-2 Metes and Bounds Description and Tax MapA-3 Property Map

NJDEP Site No. 153 Former Morris Canal
Block 21902, Lot 1 and Block 26704, Lot 5 (formerly Block 1289.5, Lot E)
City of Jersey City, Hudson County, New Jersey

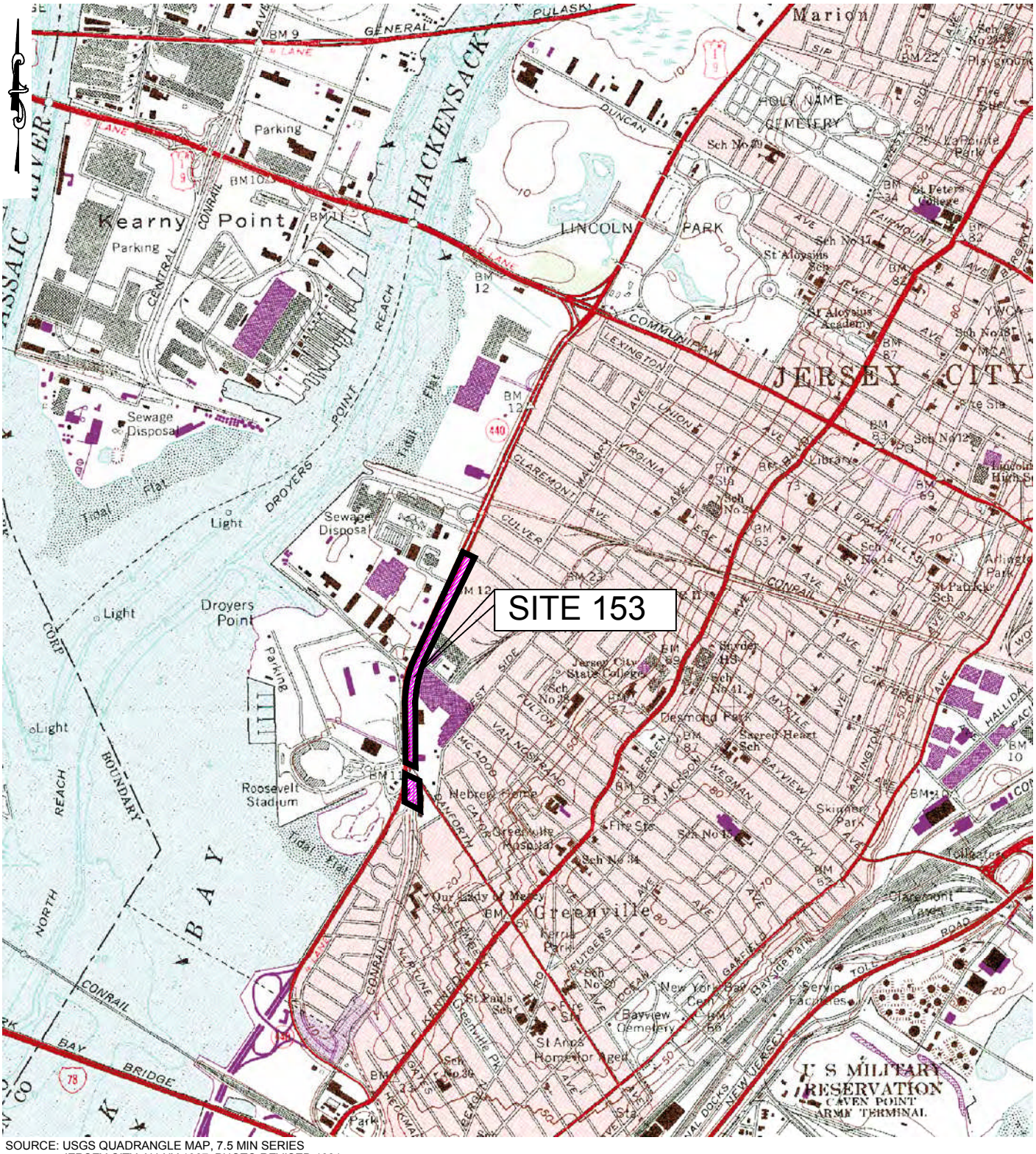
Exhibit A-1 consists of a road map for the vicinity of the Property

Exhibit A-2 (A-2A and A-2B) consists of a metes and bounds description for the Property and a Tax Map

Exhibit A-3 (A-3A through A-3D) consists of a figures indicating major surface features and existing features for the Property.

Exhibit Figure A-1
Site Vicinity Map

NJDEP Site No. 153 Former Morris Canal
Block 21902, Lot 1 and Block 26704, Lot 5 (formerly Block 1289.5, Lot E)
City of Jersey City, Hudson County, New Jersey



SOURCE: USGS QUADRANGLE MAP, 7.5 MIN SERIES
JERSEY CITY, NJ-NY 1967, PHOTO REVISED 1981

NOTE:
REFER TO OTHER EXHIBIT FIGURES FOR DETAILS

0 2000 4000
SCALE IN FEET

AMEC PROJ No.: 3480110271 *DRAWING:* 3480110271-2100-SL00-0000		
P /DATE: STR 02/27/12	*CHECKED/DATE:* CMR 02/27/12	amec ENVIRONMENT & INFRASTRUCTURE 200 AMERICAN METRO BLVD, SUITE 113 HAMILTON, NEW JERSEY 08619

EXHIBIT A-1
VICINITY MAP
DEED NOTICE
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY

FILE: P:\CADD\HONEYWELL\JERSEY CITY\SA 5\SITE 153\3480110271\2100\CURRENT DRAWINGS\3480110271-2100-SL00-0000.DWG, DATE: 11/28/2012 10:33:11AM Layout: Layout

Exhibit A-2A
Metes and Bounds Description of Property

NJDEP Site No. 153 Former Morris Canal
Block 21902, Lot 1 and Block 26704, Lot 5 (formerly Block 1289.5, Lot E)
City of Jersey City, New Jersey

Metes and Bounds Description

Real property in the City of Jersey City, County of Hudson, State of New Jersey, described as follows: All that certain Lot, piece or parcel of land, with the buildings and improvements thereon erected, situate, lying and being in the City of Jersey City, County of Hudson, State of New Jersey:

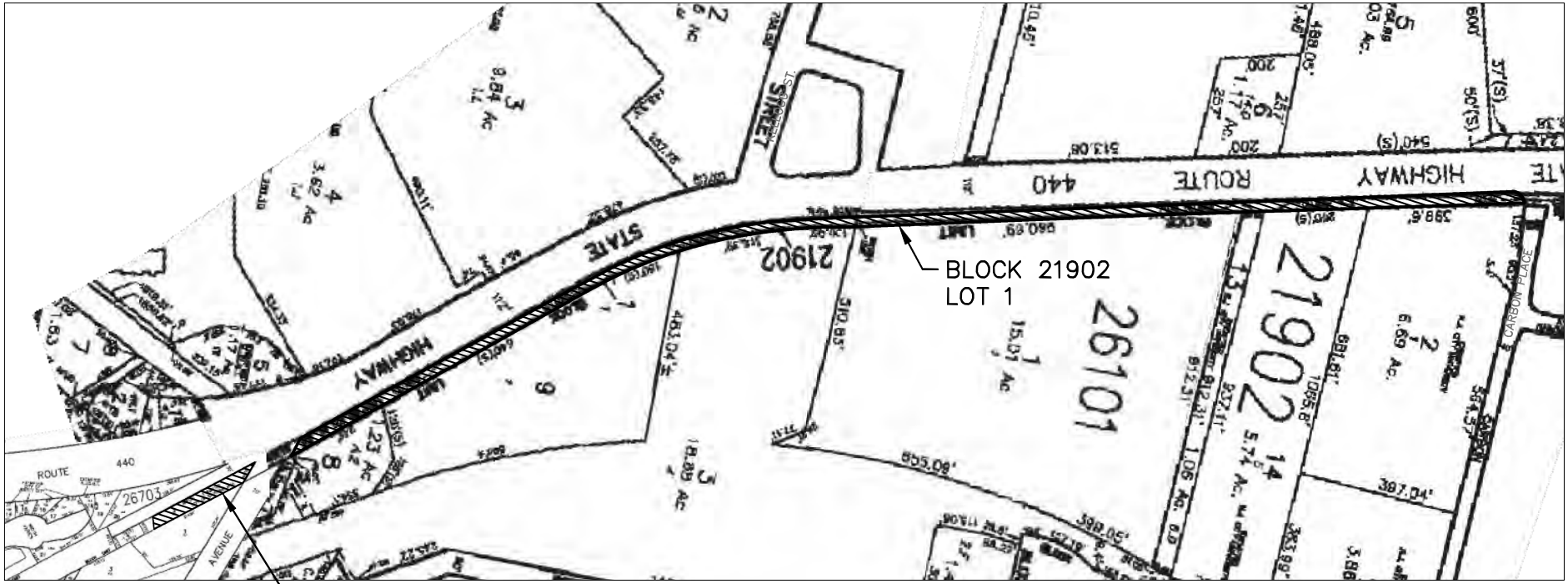
All those two certain pieces or parcels of land, being a part or portion of Grantor's property known as Branch No.1 identified as Line Code 0597 in Grantor's corporate records, also known as Block 21902, Lot 1 and Block 26704, Lot 5 (formerly Block 1289.5, Lot E) on City of Jersey City Tax maps, situate in the City of Jersey City, County of Hudson and State of New Jersey, separately bounded and described in accordance with a Plat of Survey prepared by Albert N. Faraldi, Professional Land Surveyor No. 29346, of Albert N. Faraldi Group, P.C., 854 Eight Street, Secaucus, New Jersey, dated August 10, 1988; as follows:

Tract I
Beginning at a point in the easterly line of New Jersey State Highway Route 440 distant 4.12 feet southerly from the State Highway Route 440 with the southerly line of Carbon Place (40 feet wide); and running thence (1) southerly along said New Jersey State Highway Route 440 on a curve to the left with a radius of 27.00 feet and an arc distant of39.41 feet; thence (2) South 25°09' 35" West, 1,763.23 feet to a point of curvature; thence (3) still southerly and along said New Jersey State Highway Route 440 on a curve to the left with a radius of 1,237.57 feet and an arc distance of580.19 feet to a point of tangency; thence (4) still southerly along said New Jersey State Highway Route 440 South 1° 42' 05" East, 816.38 feet to the northerly line of Danforth Avenue (70 feet wide); thence (5) South 32° 23' 37" East, 47.02 feet; thence (6) North I 42' 05" West, 855.39 feet to a point of curvature; thence (7) on a curve to the right with a radius of 1,213.57 feet and an arc distance of 568.94 feet to a point of tangency; thence (8) North 25° 09' 35" East, 1,790.06 feet, to the point of place of Beginning. Containing 78,016 square feet, or 1.791 acres, more or less.

Tract II
Beginning at a point formed by the easterly line of new Jersey State Highway Route 440 with the southerly line of Danforth Avenue (70 feet wide); and running thence (1) South 1° 42' 05" East, 290.86 feet; thence (2) South 80° 59' 02" East, 30.53; thence (3) North 1 ° 42' 05" West, 246.00 feet; thence (4) North 32° 23' 37" West, 58.77 feet to the point or place of Beginning. Containing 8,052.2 square feet, or 0.1848 of an acre, more or less.

Exhibit Figure A-2B
Tax Map

NJDEP Site No. 153 Former Morris Canal
Block 21902, Lot 1 and Block 26704, Lot 5 (formerly Block 1289.5, Lot E)
City of Jersey City, New Jersey



SOURCE :

CITY OF JERSEY CITY TAX MAPS 219, 261 & 267,
DATED AUGUST 2006

0 200 400 800

SCALE IN FEET

REV.	DATE	STATUS	DRFT BY	CHKD BY

AMEC PROJ No.: 3480110271
DRAWING: 3480110271-2100-A2B0-0000

PREPARED/DATE: STR 09/13/12

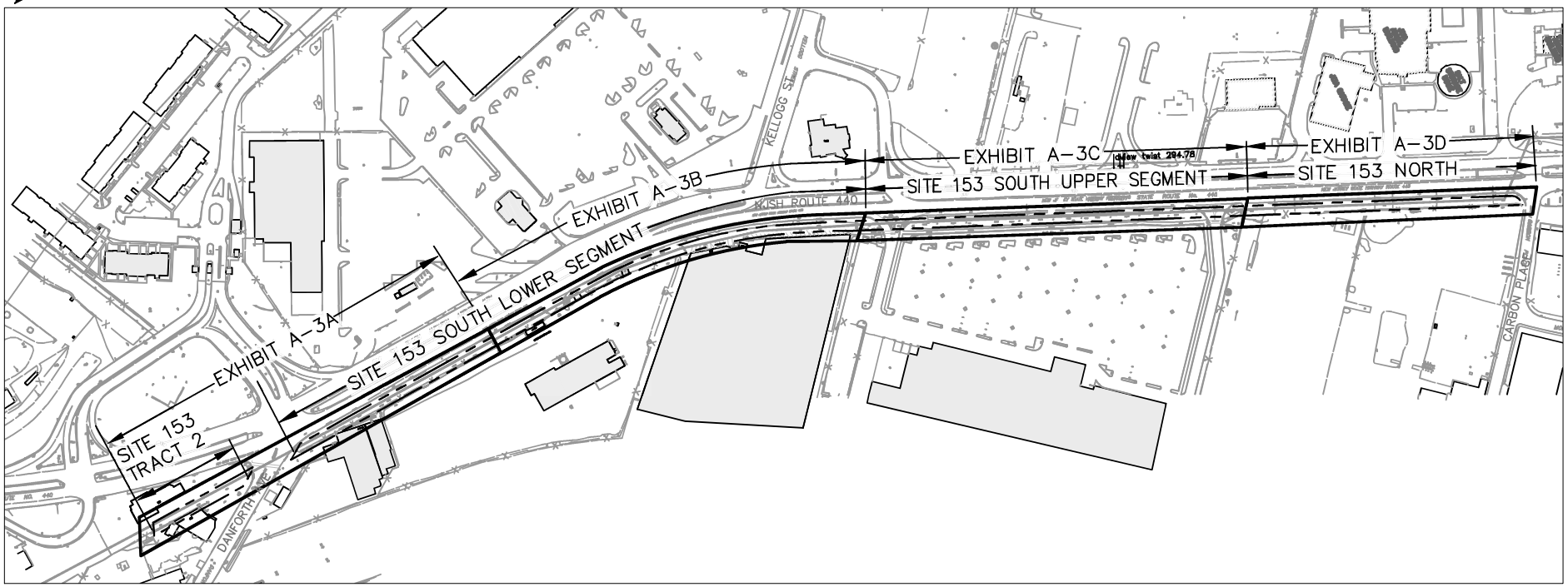
CHECKED/DATE: 09/13/12

amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

EXHIBIT A-2B
TAX MAP
DEED NOTICE
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY

Exhibit Figure A-3
Property Map

NJDEP Site No. 153 Former Morris Canal
Block 21902, Lot 1 and Block 26704, Lot 5 (formerly Block 1289.5, Lot E)
City of Jersey City, New Jersey



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SCALE IN FEET

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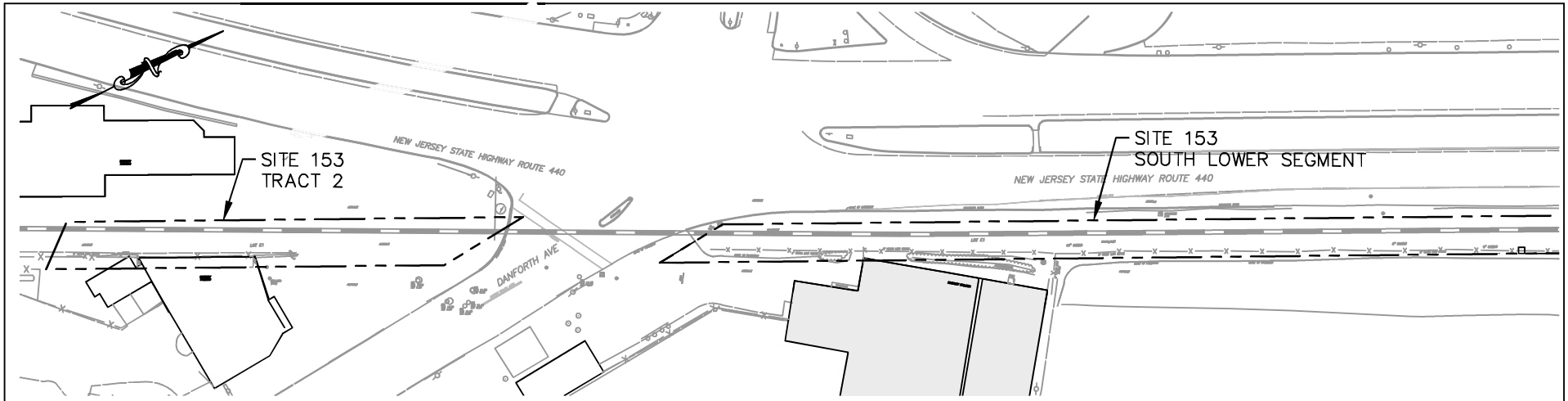
DRAWING: 3480110271-2100-A300-0000

PREPARED/DATE: STR 02/27/12
CHECKED/DATE: CMR 04/02/12

amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

EXHIBIT A-3
PROPERTY MAP KEY
DEED NOTICE
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY



PLAN VIEW

0 50 100 200

SCALE IN FEET

LEGEND

- SIGN
- UTILITY POLE
- SET PIN AND CAP — SURVEY PIN
- SANITARY MANHOLE
- STORM MANHOLE
- WELL
- ELECTRIC MANHOLE
- GV — GAS VALVE
- CATCH BASIN
- ×15.9 — SPOT ELEVATION
- TREE/BRUSH LINE
- EXISTING BUILDING
- BMUA FORCEMAIN
- PROPERTY LINE
- FENCE LINE
- 230+00 — CENTERLINE STATIONING
- 12 — GROUND ELEVATION CONTOUR
- CONCRETE CURB

REV.	DATE	STATUS	DRFT BY	CHKD BY

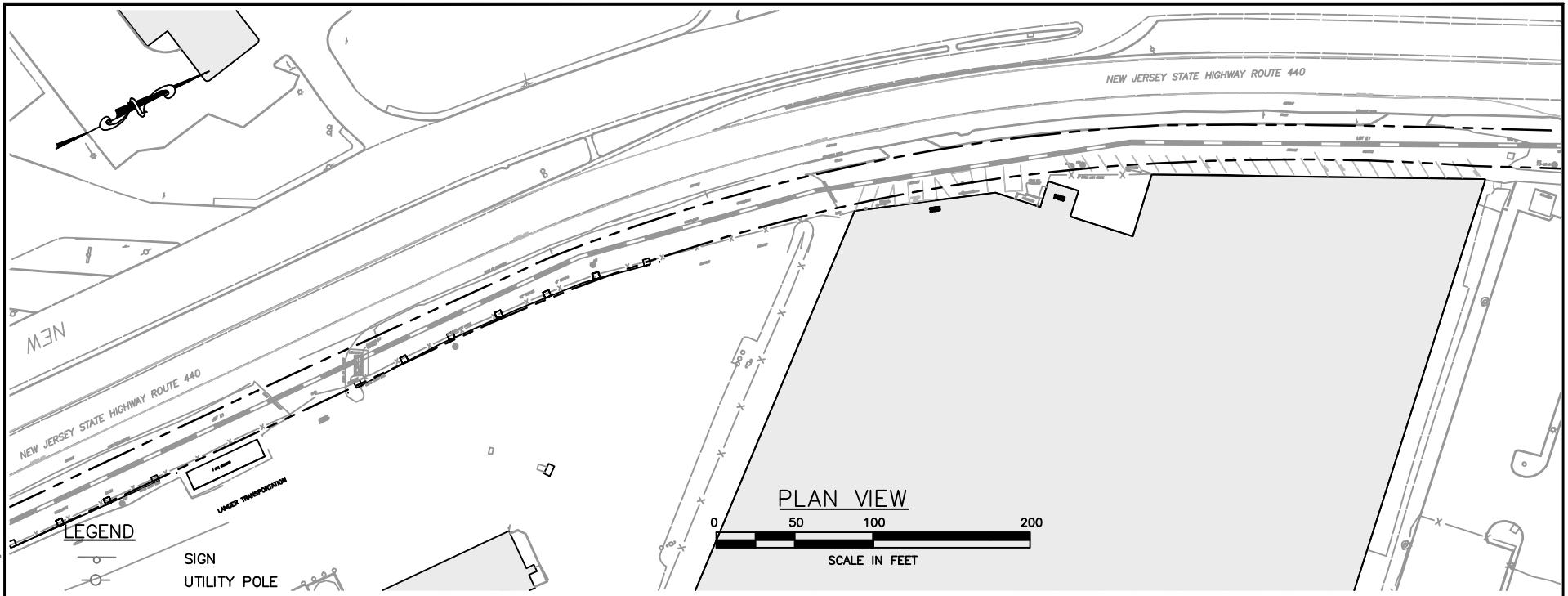
AMEC PROJ No.: 3480110271
DRAWING: 3480110271-2100-A300-0000

PREPARED/DATE: TR 02/27/12

CHECKED/DATE: 04/02/12

amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

EXHIBIT A-3A
PROPERTY MAP
SITE 153 SOUTH LOWER SEGMENT AND TRACT 2 DEED NOTICE
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY



LEGEND

- SIGN
- UTILITY POLE
- SET PIN AND CAP — SURVEY PIN
- (S) — SANITARY MANHOLE
- (D) — STORM MANHOLE
- (W) — WELL
- (E) — ELECTRIC MANHOLE
- GV — GAS VALVE
- CATCH BASIN
- ×15.9 — SPOT ELEVATION
- TREE/BRUSH LINE
- EXISTING BUILDING
- BMUA FORCEMAIN
- PROPERTY LINE
- x — FENCE LINE
- 230+00 — CENTERLINE STATIONING
- 12 — GROUND ELEVATION CONTOUR
- CONCRETE CURB

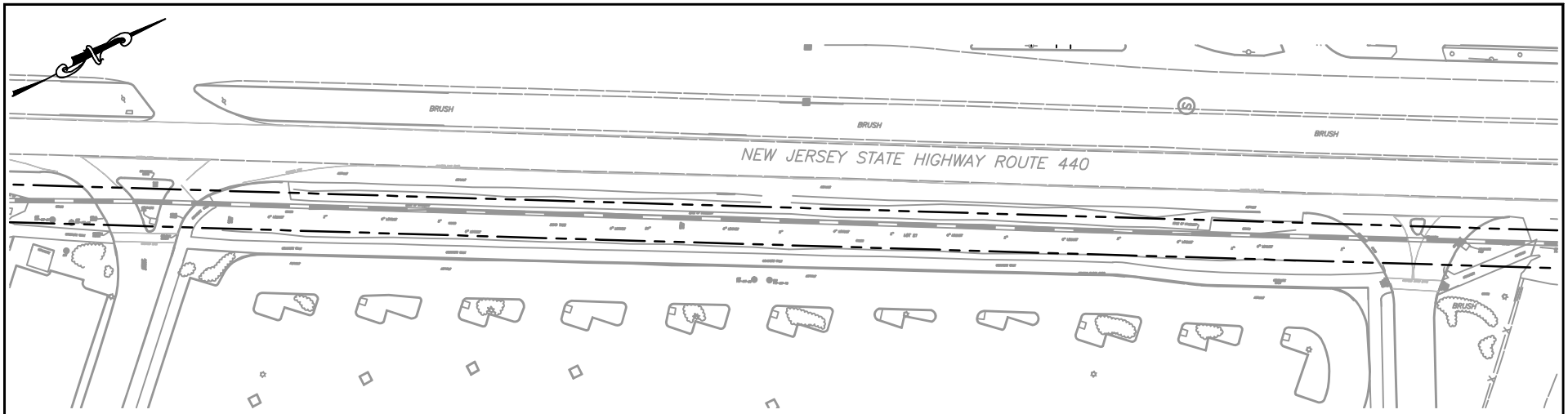
REV.	DATE	STATUS	DRFT BY	CHKD BY

AMEC PROJ No.: 3480110271
DRAWING: 3480110271-2100-A300-0000

PREPARED/DATE: STR 02/27/12
CHECKED/DATE: CMR 04/02/12

amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

EXHIBIT A-3B
PROPERTY MAP
SITE 153 SOUTH LOWER SEGMENT
DEED NOTICE
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY



LEGEND

- SIGN
- UTILITY POLE
- SURVEY PIN (SET PIN AND CAP)
- SANITARY MANHOLE
- STORM MANHOLE
- WELL
- ELECTRIC MANHOLE
- GAS VALVE (GV)
- CATCH BASIN
- SPOT ELEVATION (×15.9)
- TREE/BRUSH LINE
- EXISTING BUILDING
- BMUA FORCEMAIN
- PROPERTY LINE
- FENCE LINE (X)
- CENTERLINE STATIONING (230+00)
- GROUND ELEVATION CONTOUR (12)
- CONCRETE CURB

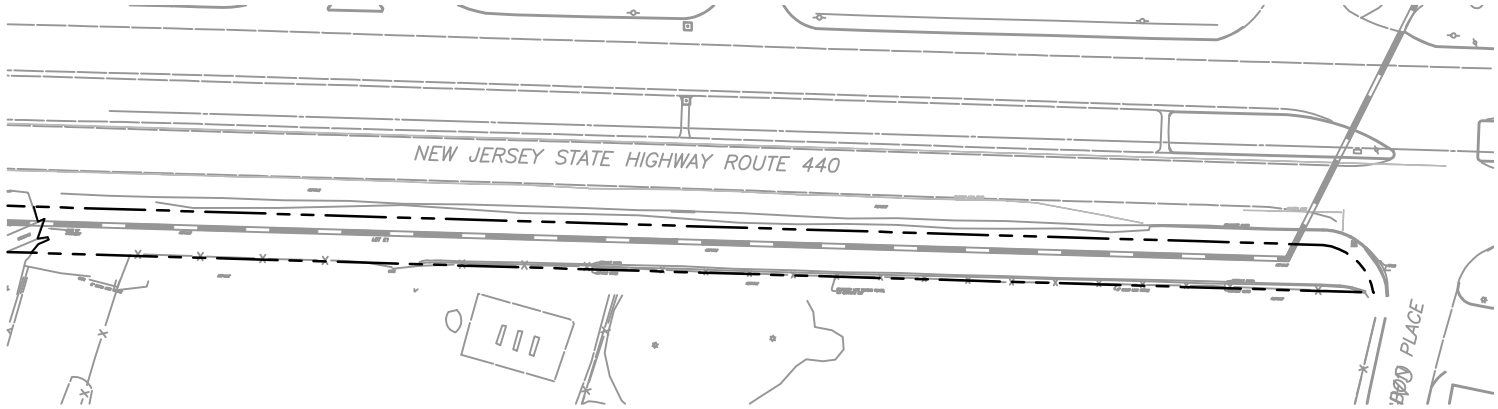
REV.	DATE	STATUS	DRFT BY	CHKD BY

AMEC PROJ No.: 3480110271
DRAWING: 3480110271-2100-A300-0000

PREPARED/DATE: STR 02/27/12
CHECKED/DATE: CMR 04/02/12

amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

EXHIBIT A-3C
PROPERTY MAP
SITE 153 SOUTH UPPER SEGMENT
DEED NOTICE
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY



LEGEND

- SIGN
- UTILITY POLE
- SURVEY PIN (SET PIN AND CAP)
- SANITARY MANHOLE
- STORM MANHOLE
- WELL
- ELECTRIC MANHOLE
- GAS VALVE (GV)
- CATCH BASIN
- SPOT ELEVATION (×15.9)
- TREE/BRUSH LINE
- EXISTING BUILDING
- BMUA FORCEMAIN
- PROPERTY LINE
- FENCE LINE
- CENTERLINE STATIONING (230+00)
- GROUND ELEVATION CONTOUR (12)
- CONCRETE CURB

PLAN VIEW

0 50 100 200

SCALE IN FEET

REV.	DATE	STATUS	DRFT BY	CHKD BY

AMEC PROJ No.: 3480110271
DRAWING: 3480110271-2100-A300-0000

PREPARED/DATE: STR 02/27/12

CHECKED/DATE: CMR 04/02/12

amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

EXHIBIT A-3D
PROPERTY MAP
SITE 153 NORTH
DEED NOTICE
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY

EXHIBIT B

B-1: Restricted Area Map and Engineering Controls
B-2: Restricted Area Data Table

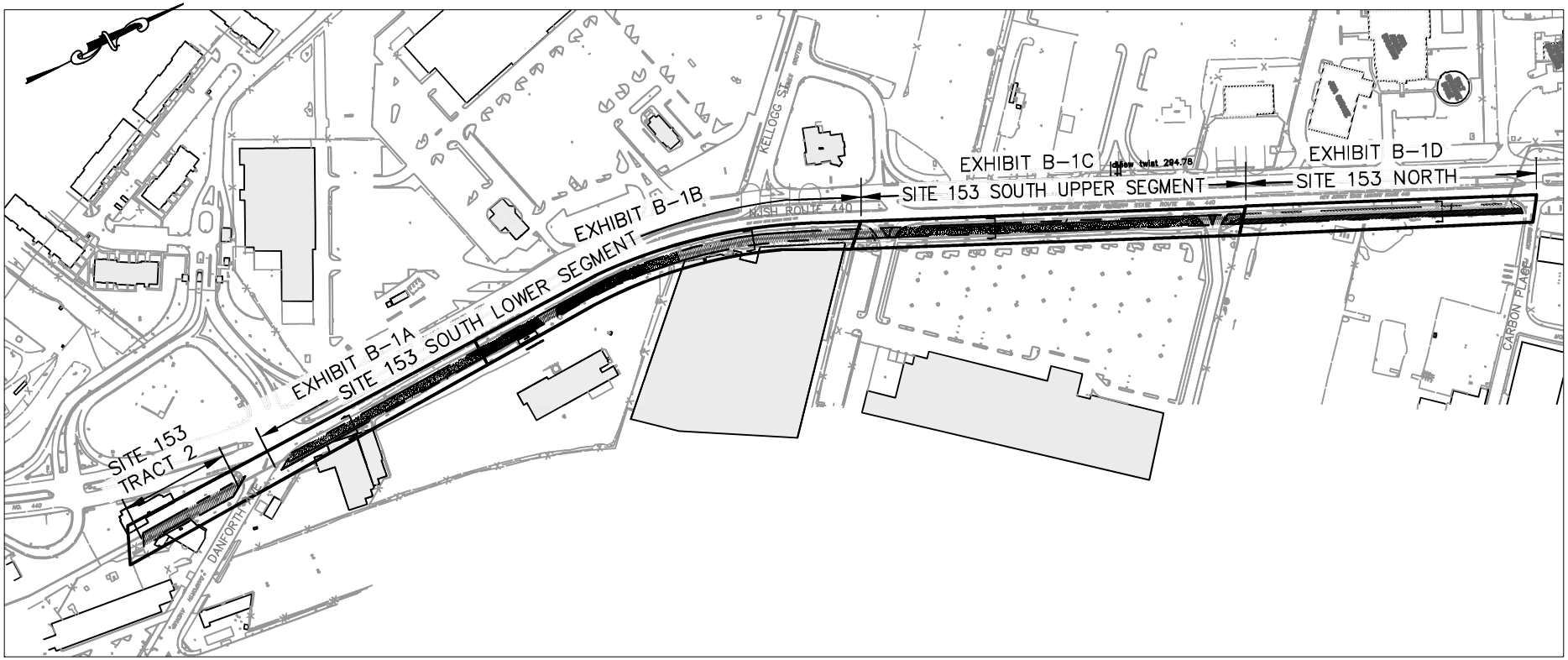
NJDEP Site No. 153 Former Morris Canal
Block 21902, Lot 1 and Block 26704, Lot 5 (formerly Block 1289.5, Lot E)
City of Jersey City, Hudson County, New Jersey

Exhibit B-1A through B-1D includes maps that illustrate the Restricted Area and engineering/institutional controls and soil sample locations.

Exhibit B-2 includes data table which identify the Restricted Area containing soils that are in excess of NJDEP unrestricted soil cleanup criteria.

Exhibit Figures B-1A through B-1D
Restricted Area Maps and Engineering Controls

NJDEP Site No. 153 Former Morris Canal
Block 21902, Lot 1 and Block 26704, Lot 5 (formerly Block 1289.5, Lot E)
City of Jersey City, New Jersey



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SCALE IN FEET

REV.	DATE	STATUS	DRFT BY	CHKD BY

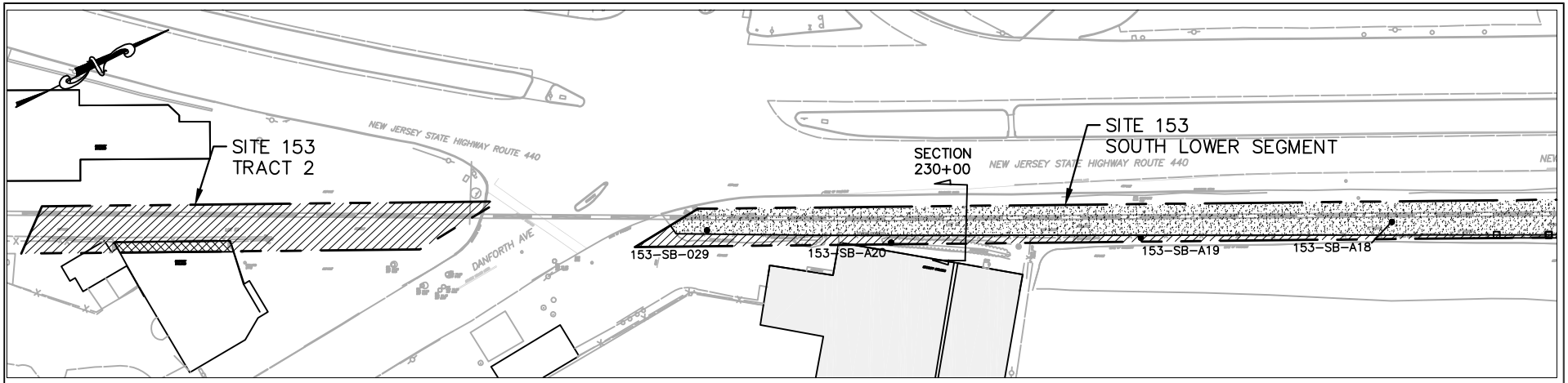
AMEC PROJ No.: 3480110271
DRAWING: 34801'0271-2100-B200-0000

PREPARED/DATE: STR 02/27/12

CHECKED/DATE: 04/02/12

amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

EXHIBIT B-1
RESTRICTED AREA MAP KEY
DEED NOTICE
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY



PLAN VIEW

0 50 100 200

SCALE IN FEET

LEGEND

153-SB-AXX — SAMPLE LOCATION

CROSS SECTION DIRECTION & LOCATION

DEED RESTRICTION AREA

BMUA FORCEMAIN

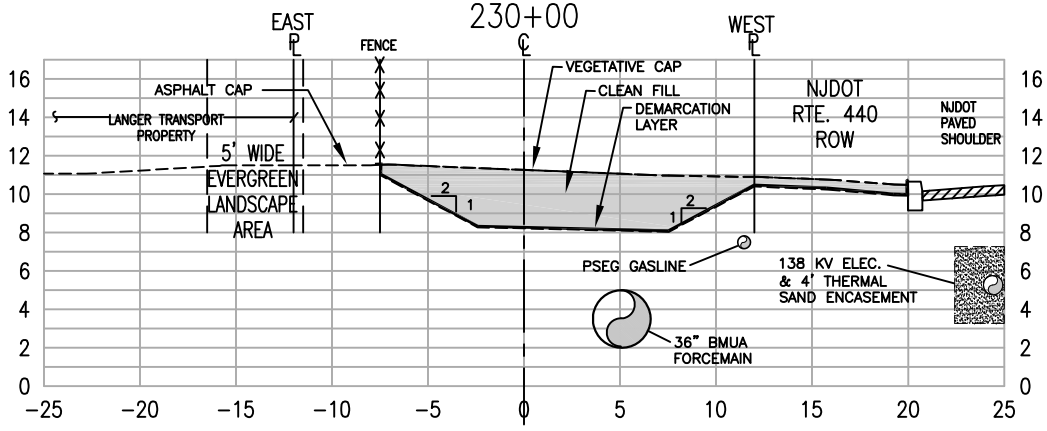
PROPERTY LINE

230+00 — CENTERLINE STATIONING

VEGETATED / SOIL CAP

ASPHALT CAP

CONCRETE CAP



CROSS SECTION STA. 230+00

SCALE: 1"=10' HORIZONTAL
1"=1' VERTICAL

NOTES:

1. FURTHER DETAILS ON THE CAP CONSTRUCTIONS CAN BE FOUND IN THE INTERIM REMEDIAL ACTION PLAN SUBMITTED TO THE NJDEP ON OCTOBER 15, 2009 AND IN EXHIBIT C-2 (A)(2) OF THIS DEED NOTICE.

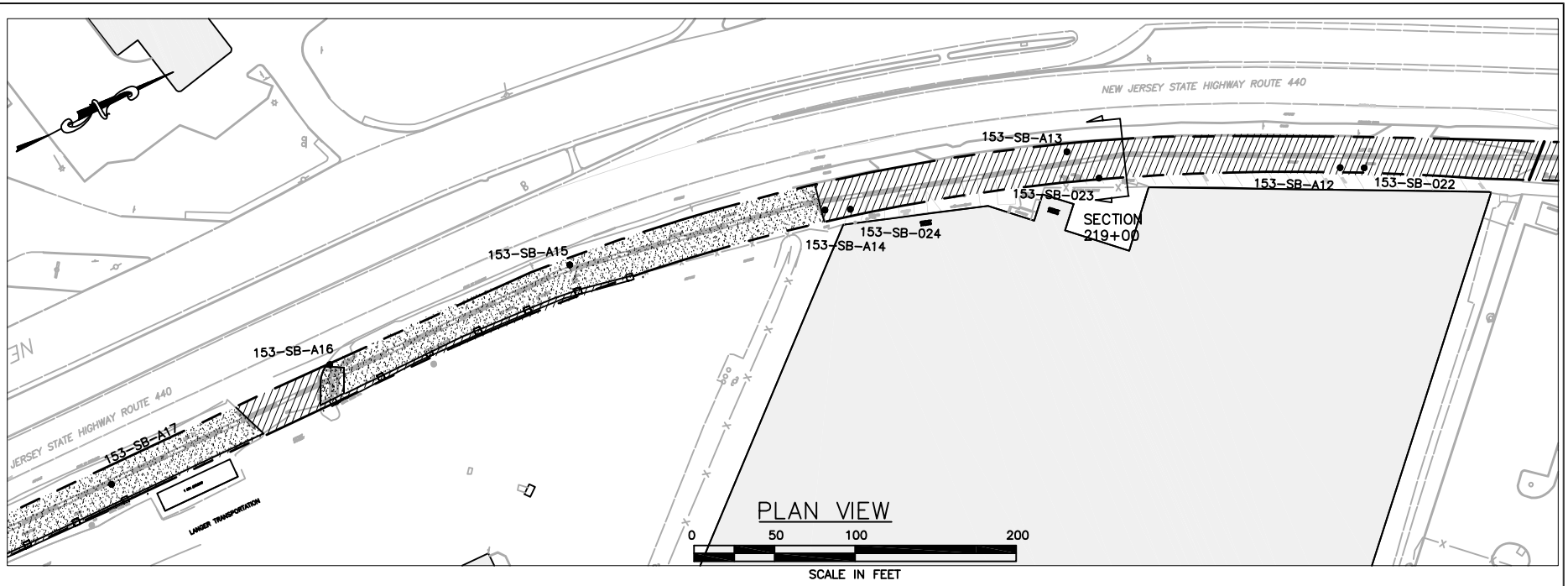
REV.	DATE	STATUS	DRFT BY	CHKD BY

AMEC PROJ No.: 3480110271
DRAWING: 3480110271-2100-B200-0000

PREPARED/DATE: STR 02/27/12
CHECKED/DATE: CMR 04/02/12

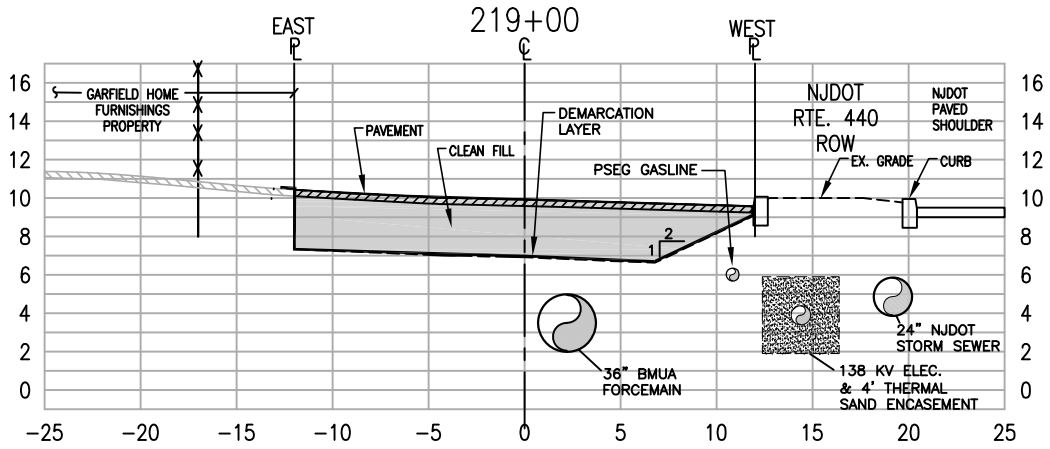
amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

EXHIBIT B-1A
RESTRICTED AREA MAP
SITE 153 SOUTH LOWER SEGMENT AND TRACT 2 DEED NOTICE
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY



LEGEND

- 153-SB-AXX — SAMPLE LOCATION
- CROSS SECTION DIRECTION & LOCATION
- DEED RESTRICTION AREA
- BMUA FORCEMAIN
- PROPERTY LINE
- 230+00 — CENTERLINE STATIONING
- VEGETATED / SOIL CAP
- ASPHALT CAP



CROSS SECTION STA. 219+00

SCALE: 1"=10' HORIZONTAL
1"=1' VERTICAL

NOTES:

1. FURTHER DETAILS ON THE CAP CONSTRUCTIONS CAN BE FOUND IN THE INTERIM REMEDIAL ACTION PLAN SUBMITTED TO THE NJDEP ON OCTOBER 15, 2009 AND IN EXHIBIT C-2 (A)(2) OF THIS DEED NOTICE.

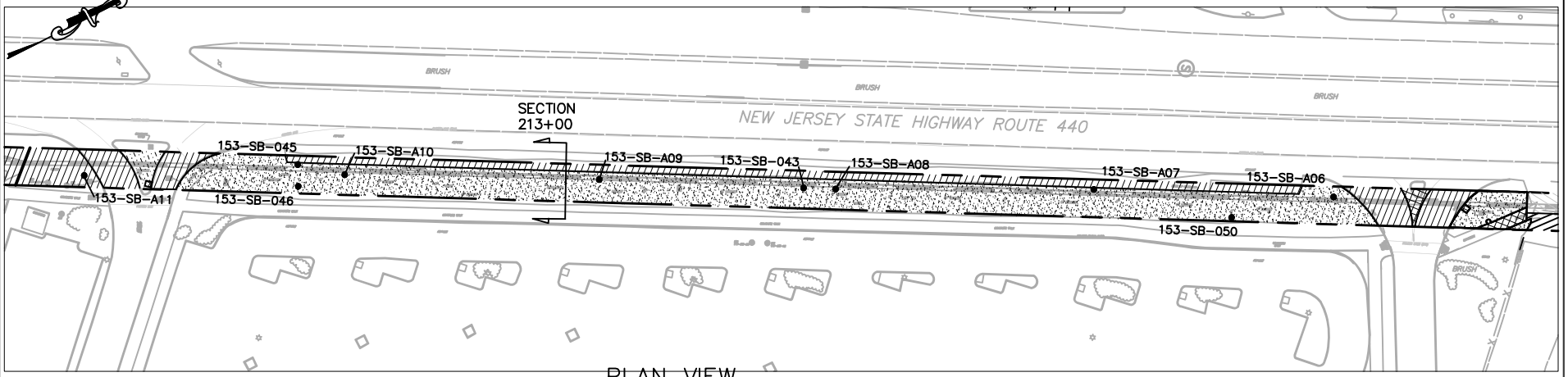
REV.	DATE	STATUS	DRFT BY	CHKD BY
	02/27/12			

AMEC PROJ No.: 3480110271
DRAWING: 3480110271-2100-B200-0000

PREPARED/DATE: STR 02/27/12
CHECKED/DATE: CMR 04/02/12

amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

EXHIBIT B-1B
RESTRICTED AREA MAP
SITE 153 SOUTH LOWER SEGMENT
DEED NOTICE
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY



PLAN VIEW

0 50 100 200

SCALE IN FEET

LEGEND

153-SB-AXX — SAMPLE LOCATION

CROSS SECTION DIRECTION & LOCATION

DEED RESTRICTION AREA

BMUA FORCEMAIN

PROPERTY LINE

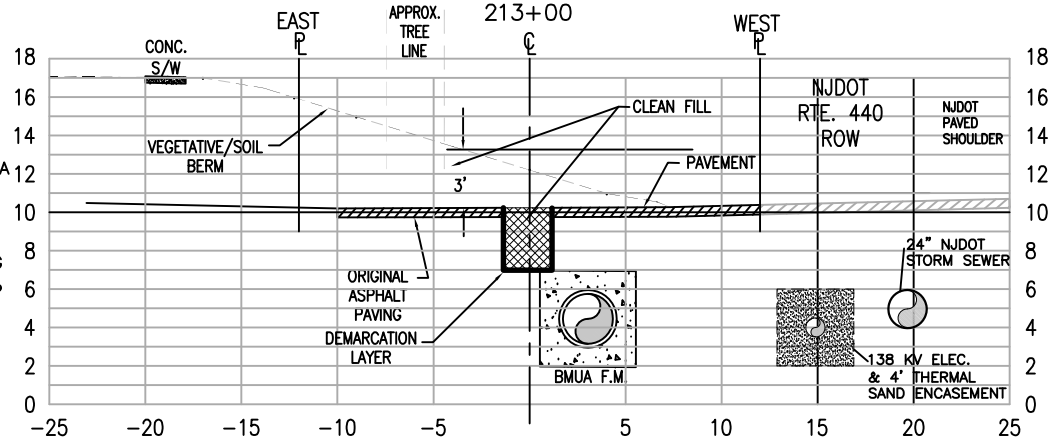
230+00 — CENTERLINE STATIONING

VEGETATED / SOIL CAP

ASPHALT CAP

CONCRETE CAP

MULCH CAP



CROSS SECTION STA. 213+00

SCALE: 1"=10' HORIZONTAL

1"=1' VERTICAL

NOTES:

1. FURTHER DETAILS ON THE CAP CONSTRUCTIONS CAN BE FOUND IN THE INTERIM REMEDIAL ACTION PLAN SUBMITTED TO THE NJDEP ON OCTOBER 15, 2009 AND IN EXHIBIT C-2 (A)(3) OF THIS DEED NOTICE.

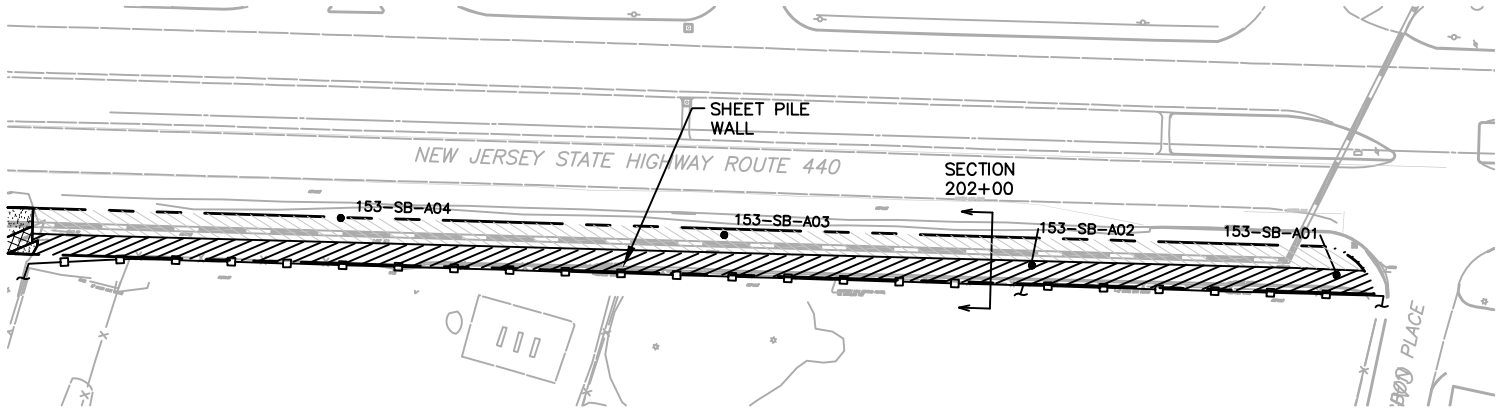
REV.	DATE	STATUS	DRFT BY	CHKD BY

AMEC PROJ No.: 3480110271
DRAWING: 3480110271-2100-B200-0000

PREPARED/DATE: STR 02/27/12
CHECKED/DATE: CMR 04/02/12

amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

EXHIBIT B-1C
RESTRICTED AREA MAP
SITE 153 SOUTH UPPER SEGMENT
DEED NOTICE
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY



PLAN VIEW

0 50 100 200

SCALE IN FEET

LEGEND

153-SB-AXX — SAMPLE LOCATION

CROSS SECTION DIRECTION & LOCATION

6" OF ASPHALT PAVEMENT, ORANGE DEMARCATION LAYER AND LLDPE LINER AS ENGINEERING CONTROL

EXISTING PAVEMENT

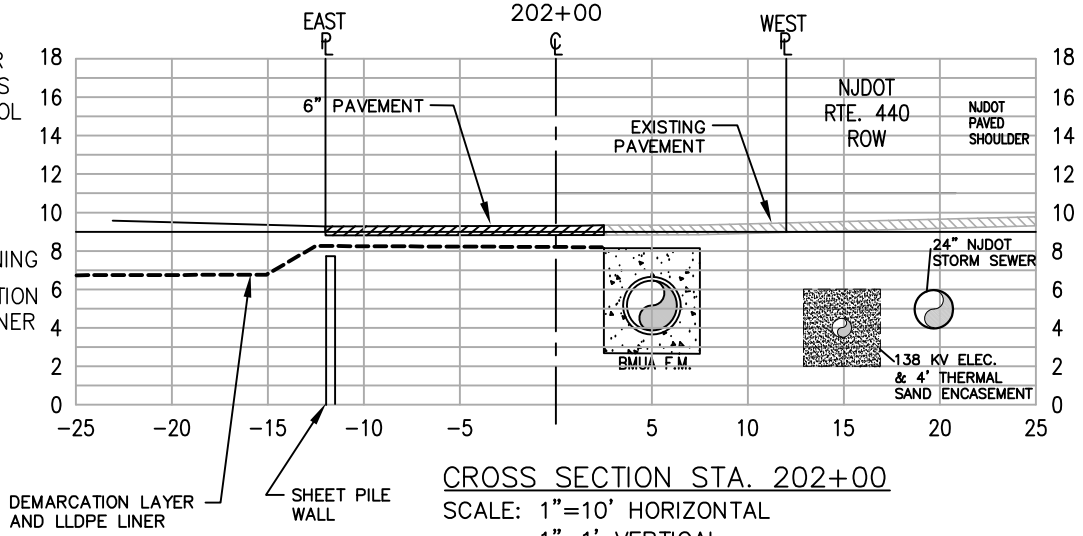
BMUA FORCEMAIN

PROPERTY LINE

230+00 — CENTERLINE STATIONING

ORANGE DEMARACATION LAYER & LLDPE LINER

SHEET PILE WALL



CROSS SECTION STA. 202+00

SCALE: 1"=10' HORIZONTAL
1"=1' VERTICAL

NOTES:

1. DEPTH OF THE SHEET PILE WALL, LLDPE LINER, DEMARCATION LAYER AND BMUA FORCEMAIN VARY.
2. THE LLDPE LINER AND DEMARCATION LAYER TERMINATES AT THE CONCRETE ENCASEMENT OF THE BMUA FORCEMAIN.
3. THE WIDTH OF THE CONCRETE ENCASEMENT AROUND THE BMUA FOCREMAIN VARIES.
4. LIMIT OF LLDPE LINER AND LOCATION OF SHEET PILE WALL ARE BASED ON AS-BUILT DRAWINGS PROVIDED BY KENNON SURVEYING SERVICES, INC. FURTHER DETAILS ON CAP CONSTRUCTION ARE PROVIDED IN THE REMEDIAL ACTION REPORT FOR THE SA-5 NJCU REMEDIATION PROJECT AND EXHIBIT C-2 (A)(1) OF DEED NOTICE.

REV.	DATE	STATUS	DRFT BY	CHKD BY

AMEC PROJ No.: 3480110271
DRAWING: 3480110271-2100-B200-0000

PREPARED/DATE: STR 02/27/12
CHECKED/DATE: CMR 04/02/12

amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

EXHIBIT B-1D
RESTRICTED AREA MAP
SITE 153 NORTH
DEED NOTICE
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY

Exhibit B-2
Restricted Area Data Table

NJDEP Site No. 153 Former Morris Canal
Block 21902, Lot 1 and Block 26704, Lot 5 (formerly Block 1289.5, Lot E)
City of Jersey City, New Jersey

Exhibit Table B-2

Restricted Area Data

Site 153 Former Morris Canal

Block 21902, Lot 1, and Block 26704, Lot 5 (formerly Block 1289.5, Lot E), Jersey City, New Jersey

Location	Sample Date	Sample Depth (feet)	Elevation (feet below msl)	Field Sample ID	Contaminant	CASR#	NJDEP RDCSRS (mg/kg)	NJDEP NRDSRS (mg/kg)	Soil Concentration (mg/kg)
153-SB-A01	5/21/1997	04-06	2.89 to 4.89	153-SB-A01-0406	Hexavalent Chromium	18540-29-9	20	20	7490J
153-SB-A01	5/21/1997	06-08	0.89 to 2.89	153-SB-A01-0608	Hexavalent Chromium	18540-29-9	20	20	7690J
153-SB-A01	5/21/1997	12-14	-5.11 to -3.11	153-SB-A01-1214	Hexavalent Chromium	18540-29-9	20	20	60.7J
153-SB-A01	5/21/1997	14-16	-7.11 to -5.11	153-SB-A01-1416	Hexavalent Chromium	18540-29-9	20	20	20.8J
153-SB-A02	5/21/1997	00-02	7.11 to 9.11	153-SB-A02-0002	Hexavalent Chromium	18540-29-9	20	20	281J
153-SB-A02	5/21/1997	02-04	5.11 to 7.11	153-SB-A02-0204	Hexavalent Chromium	18540-29-9	20	20	998J
153-SB-A02	5/21/1997	04-06	3.11 to 5.11	153-SB-A02-0406	Hexavalent Chromium	18540-29-9	20	20	361J
153-SB-A03	5/21/1997	00-02	8.54 to 10.54	153-SB-A03-0002	Hexavalent Chromium	18540-29-9	20	20	66.1J
153-SB-A03	5/21/1997	04-06	4.54 to 6.54	153-SB-A03-0406	Hexavalent Chromium	18540-29-9	20	20	1160J
153-SB-A03	5/21/1997	06-08	2.54 to 4.54	153-SB-A03-0608	Hexavalent Chromium	18540-29-9	20	20	49.7J
153-SB-A03	5/21/1997	08-10	0.54 to 2.54	153-SB-A03-0810	Hexavalent Chromium	18540-29-9	20	20	227J
153-SB-A03	5/21/1997	08-10	0.54 to 2.54	153-SB-A03-0810	Mercury	7439-97-6	23	65	32.9J
153-SB-A04	5/21/1997	04-06	5.11 to 7.11	153-SB-A04-0406	Hexavalent Chromium	18540-29-9	20	20	7680J
153-SB-A04	5/21/1997	06-08	3.11 to 5.11	153-SB-A04-0608	Hexavalent Chromium	18540-29-9	20	20	33.2J
153-SB-A04	5/21/1997	08-10	1.11 to 3.11	153-SB-A04-0810	Hexavalent Chromium	18540-29-9	20	20	93J
153-SB-A04	5/21/1997	10-12	-0.89 to 1.11	153-SB-A04-1012	Hexavalent Chromium	18540-29-9	20	20	222J
153-SB-A04	5/21/1997	10-12	-0.89 to 1.11	153-SB-A04-1012-D	Hexavalent Chromium	18540-29-9	20	20	229J
153-SB-A05	5/21/1997	00-02	10.14 to 12.14	153-SB-A05-0002	Hexavalent Chromium	18540-29-9	20	20	624J
153-SB-A05	5/21/1997	02-04	8.14 to 10.14	153-SB-A05-0204	Hexavalent Chromium	18540-29-9	20	20	4520J
153-SB-A05	5/21/1997	04-06	6.14 to 8.14	153-SB-A05-0406	Hexavalent Chromium	18540-29-9	20	20	8250J
153-SB-A05	5/21/1997	06-08	4.14 to 6.14	153-SB-A05-0608	Hexavalent Chromium	18540-29-9	20	20	9150J
153-SB-A05	5/21/1997	08-10	2.14 to 4.14	153-SB-A05-0810	Hexavalent Chromium	18540-29-9	20	20	7020J
153-SB-A05	5/21/1997	12-14	-1.86 to 0.14	153-SB-A05-1214	Hexavalent Chromium	18540-29-9	20	20	2570J
153-SB-A05	5/21/1997	14-16	-3.86 to -1.86	153-SB-A05-1416	Hexavalent Chromium	18540-29-9	20	20	187J
153-SB-A06	5/22/1997	00-02*	10.8 to 12.8	153-SB-A06-0002	Hexavalent Chromium	18540-29-9	20	20	194J
153-SB-A06	5/22/1997	04-06	6.8 to 8.8	153-SB-A06-0406	Hexavalent Chromium	18540-29-9	20	20	159J
153-SB-A06	5/22/1997	06-08	4.8 to 6.8	153-SB-A06-0608	Hexavalent Chromium	18540-29-9	20	20	4110J
153-SB-A06	5/22/1997	08-10	2.8 to 4.8	153-SB-A06-0810	Hexavalent Chromium	18540-29-9	20	20	3230J
153-SB-A06	5/22/1997	08-10	2.8 to 4.8	153-SB-A06-0810-D	Hexavalent Chromium	18540-29-9	20	20	3600J
153-SB-A06	5/22/1997	10-12	0.8 to 2.8	153-SB-A06-1012	Hexavalent Chromium	18540-29-9	20	20	1070J
153-SB-A06	5/22/1997	12-14	-1.2 to 0.8	153-SB-A06-1214	Hexavalent Chromium	18540-29-9	20	20	1970J
153-SB-A06	5/22/1997	18-20	-7.2 to -5.2	153-SB-A06-1820	Hexavalent Chromium	18540-29-9	20	20	96.3J
153-SB-A06	5/22/1997	20-22	-9.2 to -7.2	153-SB-A06-2022	Hexavalent Chromium	18540-29-9	20	20	70.4J
153-SB-A06	5/22/1997	22-24	-11.2 to -9.2	153-SB-A06-2224	Hexavalent Chromium	18540-29-9	20	20	63.9J
153-SB-A07	5/22/1997	00-02*	10.29 to 12.29	153-SB-A07-0002	Hexavalent Chromium	18540-29-9	20	20	179J
153-SB-A07	5/22/1997	02-04	6.29 to 8.29	153-SB-A07-0406	Hexavalent Chromium	18540-29-9	20	20	1520J
153-SB-A07	5/22/1997	06-08	4.29 to 6.29	153-SB-A07-0608	Hexavalent Chromium	18540-29-9	20	20	7750J
153-SB-A07	5/22/1997	06-08	4.29 to 6.29	153-SB-A07-0608	Vanadium	7440-62-2	78	1100	443
153-SB-A07	5/22/1997	06-08	4.29 to 6.29	153-SB-A07-0608	Methylene Chloride	75-09-2	34	97	0.099
153-SB-A07	5/22/1997	08-10	2.29 to 4.29	153-SB-A07-0810	Hexavalent Chromium	18540-29-9	20	20	184
153-SB-A07	5/22/1997	16-18	-5.71 to -3.71	153-SB-A07-1618	Hexavalent Chromium	18540-29-9	20	20	30.4J
153-SB-A07	5/22/1997	18-20	-7.71 to -5.71	153-SB-A07-1820	Hexavalent Chromium	18540-29-9	20	20	34.1J
153-SB-A08	5/22/1997	00-02*	9.71 to 11.71	153-SB-A08-0002	Hexavalent Chromium	18540-29-9	20	20	13100
153-SB-A08	5/22/1997	02-04	7.71 to 9.71	153-SB-A08-0204	Hexavalent Chromium	18540-29-9	20	20	4750
153-SB-A08	5/22/1997	04-06	5.71 to 7.71	153-SB-A08-0406	Hexavalent Chromium	18540-29-9	20	20	3110
153-SB-A08	5/22/1997	06-08	3.71 to 5.71	153-SB-A08-0608	Hexavalent Chromium	18540-29-9	20	20	9070
153-SB-A08	5/22/1997	06-08	3.71 to 5.71	153-SB-A08-0608-D	Hexavalent Chromium	18540-29-9	20	20	8970
153-SB-A08	5/22/1997	08-10	1.71 to 3.71	153-SB-A08-0810	Vanadium	7440-62-2	78	1100	433
153-SB-A08	5/22/1997	08-10	1.71 to 3.71	153-SB-A08-0810	Hexavalent Chromium	18540-29-9	20	20	5380
153-SB-A09	5/22/1997	00-02*	9.09 to 11.09	153-SB-A09-0002	Hexavalent Chromium	18540-29-9	20	20	39.7
153-SB-A09	5/22/1997	04-06	5.09 to 7.09	153-SB-A09-0406	Hexavalent Chromium	18540-29-9	20	20	155
153-SB-A09	5/22/1997	06-08	3.09 to 5.09	153-SB-A09-0608	Hexavalent Chromium	18540-29-9	20	20	110
153-SB-A09	5/22/1997	08-10	1.09 to 3.09	153-SB-A09-0810	Arsenic	7440-38-2	19	19	250
153-SB-A09	5/22/1997	08-10	1.09 to 3.09	153-SB-A09-0810	Lead	7439-92-1	400	800	588J
153-SB-A09	5/22/1997	08-10	1.09 to 3.09	153-SB-A09-0810	Mercury	7439-97-6	23	65	299J
153-SB-A09	5/22/1997	08-10	1.09 to 3.09	153-SB-A09-0810	Benzo(a)anthracene	56-55-3	0.6	2	2.3J
153-SB-A09	5/22/1997	08-10	1.09 to 3.09	153-SB-A09-0810	Benzo(a)pyrene	50-32-8	0.2	0.2	1.5J
153-SB-A09	5/22/1997	08-10	1.09 to 3.09	153-SB-A09-0810	Benzo(b)fluoranthene	205-99-2	0.6	2	2.5J
153-SB-A09	5/22/1997	08-10	1.09 to 3.09	153-SB-A09-0810	Indeno(1,2,3-CD)pyrene	193-39-5	0.6	2	0.84J
153-SB-A10	5/22/1997	00-02*	8.84 to 10.84	153-SB-A10-0002	Hexavalent Chromium	18540-29-9	20	20	59.8J
153-SB-A10	5/22/1997	02-04	6.84 to 8.84	153-SB-A10-0204	Hexavalent Chromium	18540-29-9	20	20	599J
153-SB-A10	5/22/1997	04-06	4.84 to 6.84	153-SB-A10-0406	Hexavalent Chromium	18540-29-9	20	20	2450J
153-SB-A10	5/22/1997	08-10	0.84 to 2.84	153-SB-A10-0810	Hexavalent Chromium	18540-29-9	20	20	3680J

Prepared by: CMR Date: 4/20/12

Checked by: AG Date: 4/20/12

Exhibit Table B-2

Restricted Area Data

Site 153 Former Morris Canal

Block 21902, Lot 1, and Block 26704, Lot 5 (formerly Block 1289.5, Lot E), Jersey City, New Jersey

Location	Sample Date	Sample Depth (feet)	Elevation (feet below msl)	Field Sample ID	Contaminant	CASR#	NJDEP RDCSRS (mg/kg)	NJDEP NRDSRS (mg/kg)	Soil Concentration (mg/kg)
153-SB-A11	5/22/1997	00-02*	8.76 to 10.76	153-SB-A11-0002	Hexavalent Chromium	18540-29-9	20	20	58.5J
153-SB-A11	5/22/1997	02-04	6.76 to 8.76	153-SB-A11-0204	Hexavalent Chromium	18540-29-9	20	20	10900J
153-SB-A11	5/22/1997	04-06	4.76 to 6.76	153-SB-A11-0406	Hexavalent Chromium	18540-29-9	20	20	67J
153-SB-A11	5/22/1997	06-08	2.76 to 4.76	153-SB-A11-0608	Hexavalent Chromium	18540-29-9	20	20	481J
153-SB-A11	5/22/1997	08-10	0.76 to 2.76	153-SB-A11-0810	Hexavalent Chromium	18540-29-9	20	20	675J
153-SB-A11	5/22/1997	08-10	0.76 to 2.76	153-SB-A11-0810-D	Hexavalent Chromium	18540-29-9	20	20	560
153-SB-A12	5/22/1997	04-06	4.05 to 6.05	153-SB-A12-0406	Hexavalent Chromium	18540-29-9	20	20	52.7J
153-SB-A12	5/22/1997	06-08	2.05 to 4.05	153-SB-A12-0608	Arsenic	7440-38-2	19	19	47.9
153-SB-A12	5/22/1997	06-08	2.05 to 4.05	153-SB-A12-0608	Hexavalent Chromium	18540-29-9	20	20	1470J
153-SB-A12	5/22/1997	06-08	2.05 to 4.05	153-SB-A12-0608	Mercury	7439-97-6	23	65	201J
153-SB-A12	5/22/1997	06-08	2.05 to 4.05	153-SB-A12-0608	Vanadium	7440-62-2	78	1100	599
153-SB-A12	5/22/1997	06-08	2.05 to 4.05	153-SB-A12-0608	Benzo(a)anthracene	56-55-3	0.6	2	300
153-SB-A12	5/22/1997	06-08	2.05 to 4.05	153-SB-A12-0608	Benzo(a)pyrene	50-32-8	0.2	0.2	290
153-SB-A12	5/22/1997	06-08	2.05 to 4.05	153-SB-A12-0608	Benzo(b)fluoranthene	205-99-2	0.6	2	340
153-SB-A12	5/22/1997	06-08	2.05 to 4.05	153-SB-A12-0608	Benzo(k)fluoranthene	207-08-9	6	23	120J
153-SB-A12	5/22/1997	06-08	2.05 to 4.05	153-SB-A12-0608	Carbazole	86-74-8	24	96	100J
153-SB-A12	5/22/1997	06-08	2.05 to 4.05	153-SB-A12-0608	Chrysene	218-01-9	62	230	300
153-SB-A12	5/22/1997	06-08	2.05 to 4.05	153-SB-A12-0608	Dibenzo(a,h)anthracene	53-70-3	0.2	0.2	39J
153-SB-A12	5/22/1997	06-08	2.05 to 4.05	153-SB-A12-0608	Indeno(1,2,3-CD)pyrene	193-39-5	0.6	2	180
153-SB-A12	5/22/1997	06-08	2.05 to 4.05	153-SB-A12-0608	Naphthalene	91-20-3	6	17	170
153-SB-A13	5/22/1997	02-04	5.73 to 7.73	153-SB-A13-0204	Hexavalent Chromium	18540-29-9	20	20	54.5J
153-SB-A13	5/22/1997	04-06	3.73 to 5.73	153-SB-A13-0406	Hexavalent Chromium	18540-29-9	20	20	34.4J
153-SB-A13	5/22/1997	08-10	-0.27 to 1.73	153-SB-A13-0810	Hexavalent Chromium	18540-29-9	20	20	232J
153-SB-A14	5/22/1997	08-10	-0.07 to 1.93	153-SB-A14-0810	Hexavalent Chromium	18540-29-9	20	20	116J
153-SB-A15	5/22/1997	08-10	1.2 to 3.2	153-SB-A15-0810	Hexavalent Chromium	18540-29-9	20	20	315
153-SB-A16	5/22/1997	08-10	1.14 to 3.14	153-SB-A16-0810	Arsenic	7440-38-2	19	19	331
153-SB-A16	5/22/1997	08-10	1.14 to 3.14	153-SB-A16-0810	Lead	7439-92-1	400	800	710J
153-SB-A16	5/22/1997	08-10	1.14 to 3.14	153-SB-A16-0810	Mercury	7439-97-6	23	65	398J
153-SB-A16	5/22/1997	08-10	1.14 to 3.14	153-SB-A16-0810	Benzo(a)anthracene	56-55-3	0.6	2	1.1J
153-SB-A16	5/22/1997	08-10	1.14 to 3.14	153-SB-A16-0810	Benzo(a)pyrene	50-32-8	0.2	0.2	0.95J
153-SB-A16	5/22/1997	08-10	1.14 to 3.14	153-SB-A16-0810	Benzo(b)fluoranthene	205-99-2	0.6	2	1.5J
153-SB-A17	5/27/1997	02-04	7.72 to 9.72	153-SB-A17-0204	Hexavalent Chromium	18540-29-9	20	20	44.1J
153-SB-A18	5/27/1997	04-06	5.67 to 7.67	153-SB-A18-0406	Hexavalent Chromium	18540-29-9	20	20	42.2J
153-SB-A18	5/27/1997	08-10	1.67 to 3.67	153-SB-A18-0810	Hexavalent Chromium	18540-29-9	20	20	77.2J
153-SB-A19	5/27/1997	02-04	7.2 to 9.2	153-SB-A19-0204	Hexavalent Chromium	18540-29-9	20	20	21.6J
153-SB-A20	5/27/1997	12-14	-3.08 to -1.08	153-SB-A20-1214	Hexavalent Chromium	18540-29-9	20	20	92.7J
153-SB-022	3/12/2010	04-06	4.05-6.05	153-SB-022-0406	Hexavalent Chromium	18540-29-9	20	20	389
153-SB-022	3/12/2010	06-08	2.05-4.05	153-SB-022-0608	Hexavalent Chromium	18540-29-9	20	20	2950
153-SB-023	3/12/2010	04-06	3.73-5.73	153-SB-023-0406	Hexavalent Chromium	18540-29-9	20	20	269
153-SB-023	3/12/2010	06-08	1.73-3.73	153-SB-023-0608	Hexavalent Chromium	18540-29-9	20	20	435
153-SB-024	3/12/2010	04-06	1.93-3.93	153-SB-024-0406	Hexavalent Chromium	18540-29-9	20	20	84.3
153-SB-029	3/17/2010	04-06	6.92-8.92	153-SB-029-0406	Hexavalent Chromium	18540-29-9	20	20	117J
153-SB-029	3/17/2010	06-08	4.92-6.92	153-SB-029-0608	Hexavalent Chromium	18540-29-9	20	20	1730J
153-SB-029	3/17/2010	08-10	2.92-4.92	153-SB-029-0810	Hexavalent Chromium	18540-29-9	20	20	7860
153-SB-043	3/22/2010	02-04	7.71-9.71	153-SB-043-0204	Hexavalent Chromium	18540-29-9	20	20	54.5
153-SB-045	3/22/2010	02-04	6.84-8.84	153-SB-045-0204	Hexavalent Chromium	18540-29-9	20	20	84.6
153-SB-045	3/22/2010	02-04	6.84-8.84	153-SB-045-0204-D	Hexavalent Chromium	18540-29-9	20	20	88.5
153-SB-046	3/22/2010	04-06	4.84-6.84	153-SB-046-0406	Hexavalent Chromium	18540-29-9	20	20	47.2
153-SB-050	3/31/2010	02-04	6.54-8.54	153-SB-050-0204	Hexavalent Chromium	18540-29-9	20	20	92.6J

Notes:

NJDEP Residential Direct Contact Soil Remediation Standards (RDCSRS) N.J.A.C. 7:26D (last revised 11/4/09)

NJDEP Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) N.J.A.C. 7:26D (last revised 11/4/09)

The NJDEP Soil Cleanup Criteria for Hexavalent Chromium is 20 mg/kg (NJDEP Chromium Policy 2/8/07)

CASR#: Chemical Abstract Service Registry Number

J: indicates estimated value based on data validation

mg/kg: milligrams per Kilogram

msl: mean sea level

Sample locations and data from the initial RI (TTNUS November 1999) and subsequent RI (AMEC June 2009 to April 2010)

*: Remedial actions included a soil excavation at this location to 3 feet. Documentation was provided in Interim Remedial Measure Report submittals to the NJDEP

Refer to the Consent Decree regarding Site 079 and Site 153 South and the NJCU Redevelopment Area (1/22/10) for further information regarding deed restriction

Prepared by: CMR Date: 4/20/12

Checked by: AG Date: 4/20/12

EXHIBIT C

C-1: Institutional Controls
C-2: Engineering Controls

NJDEP Site No. 153 Former Morris Canal
Block 21902, Lot 1 and Block 26704, Lot 5 (formerly Block 1289.5, Lot E)
City of Jersey City, Hudson County, New Jersey

Exhibit C-1 includes a description of the deed notice as institutional control including monitoring and reporting requirements.

Exhibit C-2 includes a description of engineering controls consisting of clean fill, vegetative cover and/or pavement; operations and maintenance, monitoring and reporting requirements.

C-1 Deed Notice as Institutional Control

NJDEP Site No. 153 Former Morris Canal
Block 21902, Lot 1 and Block 26704, Lot 5 (formerly Block 1289.5, Lot E)
City of Jersey City, Hudson County, New Jersey

(A) General Description:

(1) The Property shown on Exhibit B-1 known as Block 21902, Lot 1 and Block 26704, Lot 5 (formerly Block 1289.5, Lot E) is a Restricted Area. The estimated size of the Restricted Area is approximately 86,000 square feet or approximately 2 acres.

(2) Proper precautions must be taken (i.e., excavation or digging) t

.

See subsections 7A and 7B of the Deed Notice for directions on Alterations, Improvements, Disturbances, and Emergencies.

(3) The restrictions will prevent contact with soils above the NJDEP Soil Remediation Standards.

(B) Description of monitoring:

(1) Annual visual inspections of the Restricted Area will be conducted to document that the engineering controls are in good condition and to determine whether any disturbances of the soil in the Restricted Area may have resulted in unacceptable exposure to the soil contamination;

(2) Annual visual inspections of the Restricted Area will be conducted to determine whether there have been any land use changes subsequent to the filing of this Deed Notice or the most recent biennial certification, whichever is more recent;

(3) Annual visual inspections of the Restricted Area will be conducted to determine whether the current land use on the Property is consistent with the restrictions in this Deed Notice;

(4) A review will be conducted to determine if any newly promulgated or modified requirements of applicable regulations or laws apply to the Property; and

(5) A review will be conducted to determine if any new standards, regulations, or laws apply to the site that might necessitate additional sampling in order to evaluate the protectiveness of the remedial action which includes this Deed Notice. If necessary, this additional sampling will be performed.

(C) Biennial certification items:

A monitoring report will be included in the biennial certification. Components of the monitoring report will include the following:

- A report of all conditions set forth in Deed Notice subparagraph 13C.i.(C) to assure that they have been adhered to, including evaluation of any available documents created as a result of changes in land use or incidents.
- A report that determines whether or not the land use at the Property has remained consistent with the restrictions in the Deed Notice.
- A report that determines whether or not the Deed Notice continues to be protective of the public health and safety and of the environment.

C-2 Engineering Controls
Clean Fill, Vegetative Cover, Pavement Cap and
Access Point Warnings

NJDEP Site No. 153 Former Morris Canal
Block 21902, Lot 1 and Block 26704, Lot 5 (formerly Block 1289.5, Lot E)
City of Jersey City, Hudson County, New Jersey

(A) General Description:

(1) Site 153 North: Engineering controls for this portion of the Property consist of an existing 6-inch thick pavement cap west of the BMUA force main, and east of the BMUA force main a new pavement cap system consisting of: 1) linear low density polyethylene (LLDPE) liner and geo-composite drainage layer; 2) orange warning layer; 3) 2 to 18 inches of granular fill consisting of clean soil and/or crushed stone; and 4) 4 inches of pavement surface. The eastern perimeter of Site 153 North also has a sheet pile wall along the property boundary with the adjacent New Jersey City University (NJCU) property. As-built drawings of the liner system and sheet pile wall are included in the Remedial Action Report.

(2) Site 153 South – Lower Segment: Engineering controls for this portion of the Property include a nominal 24 feet wide, 1,150 feet long vegetated area from Danforth Avenue to the northern property limit of the adjacent Regnal Realty property (Block 21902, Lot 1 and Block 26704, Lot 5 Block 1288.2, Lot 1) a long asphalt area from the Regnal Realty northern property limit to the Eden Wood Realty (Block 1275, Lot 4; Garfield Home Furnishing)/Jersey City Fields, LLC (Block 1285.5, Lot 1; The Home Depot) property limit. The vegetated cap area consists of 3 feet of clean soil with warning layer at the base, and asphalt cap area consists of 12 inches of pavement surface on the top of 24 inches of granular fill with warning layer at the base. These areas were remediated and restored in accordance with In

.

(3) Site 153 South – Upper Segment: Engineering controls for this portion of the Property consist of landscaped vegetation areas and asphalt pavement cap that extends under a sloped landscaped soil berm to the adjacent Jersey City Fields, LLC (Block 1285.5, Lot 1; The Home Depot) property line. The vegetated cap areas consist of 3 feet of clean soil with warning layer at the base. One vegetative cap area, identified as the island at the southernmost entrance to Home Depot, consists of one foot of clean soil with warning layer at the base. The asphalt cap consists of 4 inches of pavement surface and includes sidewalk area along Route 440. These areas were remediated and restored in accordance with the In

Remedial Action Plan for Site 153 South Upper Segment submitted to NJDEP on April 22, 2010.

(4) Site 153 Tract II: Engineering controls for this portion of the Property located south of Danforth Avenue consists of the existing pavement cap which consists of base gravel aggregate and asphalt pavement approximately six (6) inches average thickness.

(5) Access Point Warnings: Access point warning signs will be installed within sewer manholes on the Property to communicate the presence of and prevent contact with contaminated soils.

(6) The objective of the Engineering Controls is to prevent direct contact with soils that are above the applicable NJDEP Soil Remediation Standards.

(7) The Engineering Controls is intended to function as a barrier to underlying soils, which may be above the applicable NJDEP Soil Remediation Standards.

(B) Description of the operation and maintenance:

Visual inspections of the Property will be performed annually to document that:

(1) Each engineering control is in good condition and to document the integrity, operability, and effectiveness of each engineering control;

(2) Each engineering control continues to function as designed and intended in order to protect the public health and safety and the environment;

(3) Each alteration, excavation or disturbance of any engineering control is timely and appropriately addressed to maintain the integrity of the engineering control (also, see subsections 7A and 7B of this Deed Notice for directions on Alterations, Improvements, Disturbances, and Emergencies);

(4) The integrity of each institutional control is maintained so that the remedial action continues to be protective of the public health and safety and of the environment;

(5) Records of the inspections are maintained as listed in Deed Notice subparagraph 13C.ii.(B)(5). Should the visual inspection indicate that other activities are necessary, those activities will be listed and executed; and

(6) A review of any new standards, regulations, or laws will be conducted to evaluate the protectiveness of the remedial action, which includes this Deed Notice. Should the review indicate that other activities are necessary, those activities will be listed and executed.

(C) Biennial Certification items:

The monitoring report will be included in the Biennial Certification. Components of the monitoring report will include the following:

- A report of all conditions set forth in Deed Notice subparagraph 13(C).ii.(C) to document that they have been adhered to, including an evaluation to determine whether the Engineering Controls are continuing to meet their original objectives and intended functions.
- A report to determine whether the Engineering Controls continue to operate as designed.
- A report to determine whether the Engineering Controls continue to be protective of the public health and safety and of the environment.

EXHIBIT D

Consent Decrees as Institutional Controls

D-1: Consent Decree Regarding Sites 79 and 153 South
D-2: Consent Decree Regarding Remediation of the NJCU Redevelopment Area

NJDEP Site No. 153 Former Morris Canal
Block 21902, Lot 1 and Block 26704, Lot 5 (formerly Block 1289.5, Lot E)
City of Jersey City, Hudson County, New Jersey

The Property subject to this Deed Notice is defined as Site 153 North and Site 153 South in the Consent Decree Regarding Sites 79 and 153 South and the Consent Decree Regarding Remediation of the New Jersey City University (NJCU) Redevelopment Area, which are attached hereto and were entered as an order of the Court in the following consolidated actions *JCMUA v. Honeywell International Inc.,* D.N.J., Civ. No. 05-05955; *JCIA v. Honeywell International Inc.,* D.N.J., Civ. No. 05-5993; and *Hackensack Riverkeeper, Inc. v. Honeywell International Inc.,* D.N.J., Civ. No. 06-22.

The Consent Decrees restrict the transfer, use and development of the Site 153 South and North portions of the Property without further remediation pursuant to the terms of the Consent Decrees. To the extent that there is any conflict or inconsistency between the terms of this Deed Notice and the terms of the Consent Decrees, the Consent Decrees shall govern. To the extent that any action to be taken pursuant to this Deed Notice is in conflict with or inconsistent with the Consent Decrees, the Consent Decrees shall govern.

APPENDIX K

DRAFT DEED NOTICES FOR OFFSITE PROPERTIES

APPENDIX K-1

DRAFT DEED NOTICE
DANFORTH REALTY, LLC PROPERTY

DEED NOTICE

IN ACCORDANCE WITH N.J.S.A. 58:10B-13, THIS DOCUMENT IS TO BE RECORDED IN THE SAME MANNER AS ARE DEEDS AND OTHER INTERESTS IN REAL PROPERTY.

Prepared by: _____
[Signature]

_____
[Print name below signature]

Recorded by: _____
[Signature, Officer of County Recording Office]

_____
[Print name below signature]

DEED NOTICE

This Deed Notice is made as of the _____ day of _____, 2014, by Danforth Realty, LLC, whose post office address is 460 Chestnut Avenue, South Hackensack, NJ 07606 (together with his/her/its/their successors and assigns, collectively "Owner").

1. THE PROPERTY. Danforth Realty LLC. is the owner in fee simple of certain real property designated as Block 26101 Lot 7 (previously Block 1271.5, Lot A.1), on the tax map of the City of Jersey City, Hudson County; and the property is more particularly described in Exhibit A, which is attached hereto and made a part hereof (the "Property").

2. REMEDIATION.

i. The New Jersey Department of Environmental Protection (NJDEP) Bureau of State Case Management was the program that was responsible for the oversight of the remediation of the Property. The matter was Hudson County Chromate Site No. 153 Program Interest (PI) # G000008767. Remedial actions for chromium contamination will be addressed in a Remedial Action Work Plan to be submitted by Honeywell to the NJDEP.

ii. N.J.A.C. 7:26C-7 requires the Owner, among other persons, to obtain a soil remedial action permit for the soil remedial action at the Property. That permit will contain the monitoring, maintenance and biennial certification requirements that apply to the Property.

3. SOIL CONTAMINATION. Honeywell, a corporation in the State of New Jersey whose post office address is 101 Columbia Road, Morristown, New Jersey 07962, is remediating the

Property to address chromium-related impacts. Remediation of chromium contamination will be addressed in a Remedial Action Work Plan to be submitted by Honeywell to the NJDEP as part of Site 153 Former Morris Canal (PI#G000008767). The remediation includes engineering controls such that soil contamination remains in certain areas of the Property that contains contaminants in concentrations that do not allow for the unrestricted use of the Property. This soil contamination is described, including the type, concentration and specific location of such contaminants, in Exhibit B, which is attached hereto and made a part hereof. As a result, there is a statutory requirement for this Deed Notice and engineering controls in accordance with N.J.S.A. 58:10B-13.

4. CONSIDERATION. In accordance with the remedial action for the site which included the Property, and in consideration of the terms and conditions of that remedial action, and other good and valuable consideration, Owner has agreed to subject the Property to certain statutory and regulatory requirements that impose restrictions upon the use of the Property, to restrict certain uses of the Property, and to provide notice to subsequent owners, lessees and operators of the restrictions and the monitoring, maintenance, and biennial certification requirements outlined in this Deed Notice and required by law, as set forth herein.

5A. RESTRICTED AREAS. Due to the presence of contamination remaining at concentrations that do not allow for unrestricted use, the Owner has agreed, as part of the anticipated future remedial actions for the Property, to restrict the use of certain parts of the Property (the "Restricted Areas"); a narrative description of these restrictions is provided in Exhibit C, which is attached hereto and made a part hereof. The Owner has also agreed to maintain a list of these restrictions on site for inspection by governmental officials.

5B. RESTRICTED LAND USES. The following statutory land use restrictions apply to the Restricted Areas:

i. The Brownfield and Contaminated Site Remediation Act, N.J.S.A. 58:10B-12.g(10), prohibits the conversion of a contaminated site, remediated to non-residential soil remediation standards that require the maintenance of engineering or institutional controls, to a child care facility, or public, private, or charter school without the Department’s prior written approval, unless a presumptive remedy is implemented; and

ii. The Brownfield and Contaminated Site Remediation Act, N.J.S.A. 58:10B-12.g(12), prohibits the conversion of a landfill, with gas venting systems and or leachate collection systems, to a single family residence or a child care facility without the Department’s prior written approval.

5C. ENGINEERING CONTROLS. Due to the presence and concentration of these contaminants, the Owner has also agreed, as part of the remedial action for the Property, to the placement of certain engineering controls on the Property; a narrative description of these engineering controls is provided in Exhibit C. Honeywell will be responsible for monitoring and the biennial certification reporting requirements to be specified as part of the soil remedial action permit for the Property, to be obtained from the NJDEP following completion of remedial actions.

6A. CHANGE IN OWNERSHIP AND REZONING.

i. The Owner and the subsequent owners and lessees, shall cause all leases, grants, and other written transfers of an interest in the Restricted Areas to contain a provision expressly requiring all holders thereof to take the Property subject to the restrictions contained herein and to comply with all, and not to violate any of the conditions of this Deed Notice. Nothing contained in this Paragraph shall be construed as limiting any obligation of any person to provide any notice required by any law, regulation, or order of any governmental authority.

ii. The Owner and the subsequent owners shall provide written notice to the Department of Environmental Protection on a form provided by the Department and available at www.nj.gov/srp/forms within thirty (30) calendar days after the effective date of any conveyance, grant, gift, or other transfer, in whole or in part, of the owner's interest in the Restricted Area.

iii. The Owner and the subsequent owners shall provide written notice to the Department, on a form available from the Department at www.nj.gov/srp/forms, within thirty (30) calendar days after the owner's petition for or filing of any document initiating a rezoning of the Property to residential.

6B. SUCCESSORS AND ASSIGNS. This Deed Notice shall be binding upon Owner and upon Owner's successors and assigns, and subsequent owners, lessees and operators while each is an owner, lessee, or operator of the Property.

7A. ALTERATIONS, IMPROVEMENTS, AND DISTURBANCES.

i. The Owner and all subsequent owners and lessees shall notify any person, including, without limitation, tenants, employees of tenants, and contractors, intending to conduct invasive work or excavate within the Restricted Areas, of the nature and location of contamination in the Restricted Areas, and, of the precautions necessary to minimize potential human exposure to contaminants.

ii. Except as provided in Paragraph 7B, below, no person shall make, or allow to be made, any alteration, improvement, or disturbance in, to, or about the Property which disturbs any engineering control at the Property without first obtaining a soil remedial action permit modification pursuant to N.J.A.C. 7:26C-7. Nothing herein shall constitute a waiver of the obligation of any person to comply with all applicable laws and regulations including, without limitation, the applicable rules of the Occupational Safety and Health Administration.

iii. Notwithstanding subparagraph 7Aii., above, a soil remedial action permit modification is not required for any alteration, improvement, or disturbance provided that the owner, lessee or operator:

(A) Notifies the Department of Environmental Protection of the activity by calling the DEP Hotline, at 1-877-WARN-DEP or 1-877-927-6337, within twenty-four (24) hours after the beginning of each alteration, improvement, or disturbance;

(B) Notifies Honeywell of the activity by calling 855-727-2658;

(C) Restores or causes Honeywell to restore any disturbance of an engineering control to pre-disturbance conditions within sixty (60) calendar days after the initiation of the alteration, improvement or disturbance;

(D) Follows all applicable worker health and safety laws and regulations during the alteration, improvement, or disturbance, and during the restoration;

(E) Takes appropriate measures so that human exposure to contamination in excess of the remediation standards does not occur; and

(F) Describes, in the next biennial certification the nature of the alteration, improvement, or disturbance, the dates and duration of the alteration, improvement, or disturbance, the name of key individuals and their affiliations conducting the alteration, improvement, or disturbance, a description of the notice the Owner gave to those persons prior to the disturbance.

7B. EMERGENCIES. In the event of an emergency which presents, or may present, an unacceptable risk to the public health and safety, or to the environment, or immediate environmental concern, see N.J.S.A. 58:10C-2, any person may temporarily breach an engineering control provided that that person complies with each of the following:

i. Immediately notifies the Department of Environmental Protection of the emergency, by calling the DEP Hotline at 1-877-WARNDEP or 1-877-927-6337;

ii. Immediately notifies Honeywell of the emergency by calling 855-727-2658;

iii. Hires a Licensed Site Remediation Professional (unless the Restricted Areas includes an unregulated heating oil tank) to respond to the emergency;

iv. Limits both the actual disturbance and the time needed for the disturbance to the minimum reasonably necessary to adequately respond to the emergency;

v. Implements all measures necessary to limit actual or potential, present or future risk of exposure to humans or the environment to the contamination;

vi. Notifies the Department of Environmental Protection when the emergency or immediate environmental concern has ended by calling the DEP Hotline at 1-877-WARNDEP or 1-877-927-6337;

vii. Notifies Honeywell when the emergency or immediate environmental concern has ended by calling 855-727-2658; and

viii. Restores or causes Honeywell to restore the engineering control to the pre-emergency conditions as soon as possible, and provides notification to the Department of Environmental Protection within sixty (60) calendar days after completion of the restoration of the engineering control, including: (a) the nature and likely cause of the emergency; (b) the potential discharges of or exposures to contaminants, if any, that may have occurred; (c) the measures that have been taken to mitigate the effects of the emergency on human health and the environment; (d) the measures completed or implemented to restore the engineering control; and (e) the changes to the engineering control or site operation and maintenance plan to prevent reoccurrence of such conditions in the future.

8. TERMINATION OF DEED NOTICE.

i. This Deed Notice may be terminated only upon filing of a Termination of Deed Notice, available at N.J.A.C. 7:26C Appendix C, with the office of the Register of Deeds of Hudson County, New Jersey, expressly terminating this Deed Notice.

ii. Within thirty (30) calendar days after the filing of a Termination of Deed Notice, the owner of the property shall apply to the Department for termination of the soil remedial action permit pursuant to N.J.A.C. 7:26C-7.

9. ACCESS. The Owner, and the subsequent owners, lessees and operators agree to allow the Department, its agents and representatives access to the Property to inspect and evaluate the continued protectiveness of the remedial action that includes this Deed Notice and to conduct additional remediation to provide for the protection of the public health and safety and of the environment if the subsequent owners, lessees and operators, during their ownership, tenancy, or operation, and the Owner fail to conduct such remediation pursuant to this Deed Notice as required by law. The Owner, and the subsequent owners and lessees, shall also cause all leases, subleases, grants, and other written transfers of an interest in the Restricted Areas to contain a provision expressly requiring that all holders thereof provide such access to the Department.

10. ENFORCEMENT OF VIOLATIONS.

i. This Deed Notice itself is not intended to create any interest in real estate in favor of the Department of Environmental Protection, nor to create a lien against the Property, but merely is intended to provide notice of certain conditions and restrictions on the Property and to reflect the regulatory and statutory obligations imposed as a conditional remedial action for this site.

ii. The restrictions provided herein may be enforceable solely by the Department against any person who violates this Deed Notice. To enforce violations of this Deed Notice, the Department may initiate one or more enforcement actions pursuant to N.J.S.A. 58:10-23.11, and N.J.S.A. 58:10C, and require additional remediation and assess damages pursuant to N.J.S.A. 58:10-23.11, and N.J.S.A. 58:10C.

11. SEVERABILITY. If any court of competent jurisdiction determines that any provision of this Deed Notice requires modification, such provision shall be deemed to have been modified automatically to conform to such requirements. If a court of competent jurisdiction determines that any provision of this Deed Notice is invalid or unenforceable and the provision is of such a nature that it cannot be modified, the provision shall be deemed deleted from this instrument as though the provision had never been included herein. In either case, the remaining provisions of this Deed Notice shall remain in full force and effect.

12A. EXHIBIT A. Exhibit A includes the following maps of the Property and the vicinity:

i. Exhibit A-1: Vicinity Map - A map that identifies by name the roads, and other important geographical features in the vicinity of the Property (for example, USGS Quad map, Hagstrom County Maps);

ii. Exhibit A-2: Metes and Bounds Description - A tax map of lots and blocks as well as metes and bounds description of the Property, including reference to tax lot and block numbers for the Property;

iii. Exhibit A-3: Property Map - A scaled map of the Property, scaled at one inch to 200 feet or less, and if more than one map is submitted, the maps shall be presented as overlays, keyed to a base map; and the Property Map shall include diagrams of major surface topographical features such as buildings, roads, and parking lots.

12B. EXHIBIT B. Exhibit B includes the following descriptions of the Restricted Areas:

i. Exhibit B-1: Restricted Area Map - A separate map for each restricted area that includes:

(A) As-built diagrams of each engineering control;

(B) As-built diagrams of any buildings, roads, parking lots and other structures that function as engineering controls; and

(C) Designation of all soil sample locations within the restricted areas that exceed any soil standard that are keyed into one of the tables described in the following paragraph.

ii. Exhibit B-2: Restricted Area Data Table - A separate table for each restricted area that includes either (A) or (B) through (F):

(A) Only for historic fill extending over the entire site or a portion of the site and for which analytical data are limited or do not exist, a narrative that states that historic fill is present at the site, a description of the fill material (e.g., ash, cinders, brick, dredge material), and a statement that such material may include, but is not limited to, contaminants such as PAHs and metals;

(B) Sample location designation from Restricted Area map (Exhibit B-1);

(C) Sample elevation based upon mean sea level;

(D) Name and chemical abstract service registry number of each contaminant with a concentration that exceeds the unrestricted use standard;

(E) The restricted and unrestricted use standards for each contaminant in the table; and

(F) The remaining concentration of each contaminant at each sample location at each elevation.

12C. EXHIBIT C. Exhibit C includes narrative descriptions of the institutional controls and engineering controls as follows:

i. Exhibit C-1: Deed Notice as Institutional Control: Exhibit C-1 includes a narrative description of the restriction and obligations of this Deed Notice that are in addition to those described above, as follows:

(A) Description and estimated size of the Restricted Areas as described above;
(B) Description of the restrictions on the Property by operation of this Deed Notice; and
(C) The objective of the restrictions.

ii. Exhibit C-2: Engineering Control: Asphalt Pavement and Clean Soil: Exhibit C-2 includes a narrative description of the engineering control (pavement) as follows:

(A) Description of the engineering control;
(B) The objective of the engineering control; and
(C) How the engineering control is intended to function.

13. SIGNATURES. IN WITNESS WHEREOF, Owner has executed this Deed Notice as of the date first written above.

[If Owner is a corporation]

ATTEST: Danforth Realty, LLC

_____ By_____

_____ _____
[Print name and title] [Signature]

STATE OF [State where document is executed] SS.:
COUNTY OF [County where document is executed]

I certify that on _____, 2014__, [Name of person executing document on behalf of Owner] personally came before me, and this person acknowledged under oath, to my satisfaction, that:

(a) this person is the [secretary/assistant secretary] of Danforth Realty, LLC, the corporation named in this document;

(b) this person is the attesting witness to the signing of this document by the proper corporate officer who is the [president/vice president] of the corporation;

(c) this document was signed and delivered by the corporation as its voluntary act and was duly authorized;

(d) this person knows the proper seal of the corporation which was affixed to this document; and

(e) this person signed this proof to attest to the truth of these facts.

_____
[Signature]

_____
[Print name and title of attesting witness]

Signed and sworn before me on _____, 2014

_____, Notary Public

_____
[Print name and title]

EXHIBIT A

A-1 Vicinity Map
A-2 Metes and Bounds Description and Tax Map
A-3 Property Map

Block 26101, Lot 7
432 Danforth Ave
Jersey City, New Jersey

Exhibit A-1 consists of a road map for the vicinity of the Property

Exhibit A-2 consists of a metes and bounds description for the Property and a Tax Map

Exhibit A-3 consists of a figure indicating major surface features and existing features for the Property.

Exhibit Figure A-1
Site Vicinity Map

Block 26101, Lot 7
432 Danforth Ave
Jersey City, New Jersey

Legend

Property Boundary

Source:

Parcels of Hudson County, New Jersey State Plane NAD83; Hudson County Department of Planning; Hudson County Department of Planning, Jersey City, NJ; 20100127.

World_Topo_Map; ESRI Internet Map Service; http://services.arcgisonline.com/arcgis/services.

500 0 500

Scale In Feet

amec

ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

DRAFT

Exhibit A-1: Vicinity Map

Block 26101 Lot 7
Jersey City, New Jersey

PROJ. NO.	3480110271	12/18/2014	REV.
Created By	WSL	Checked By	JJH

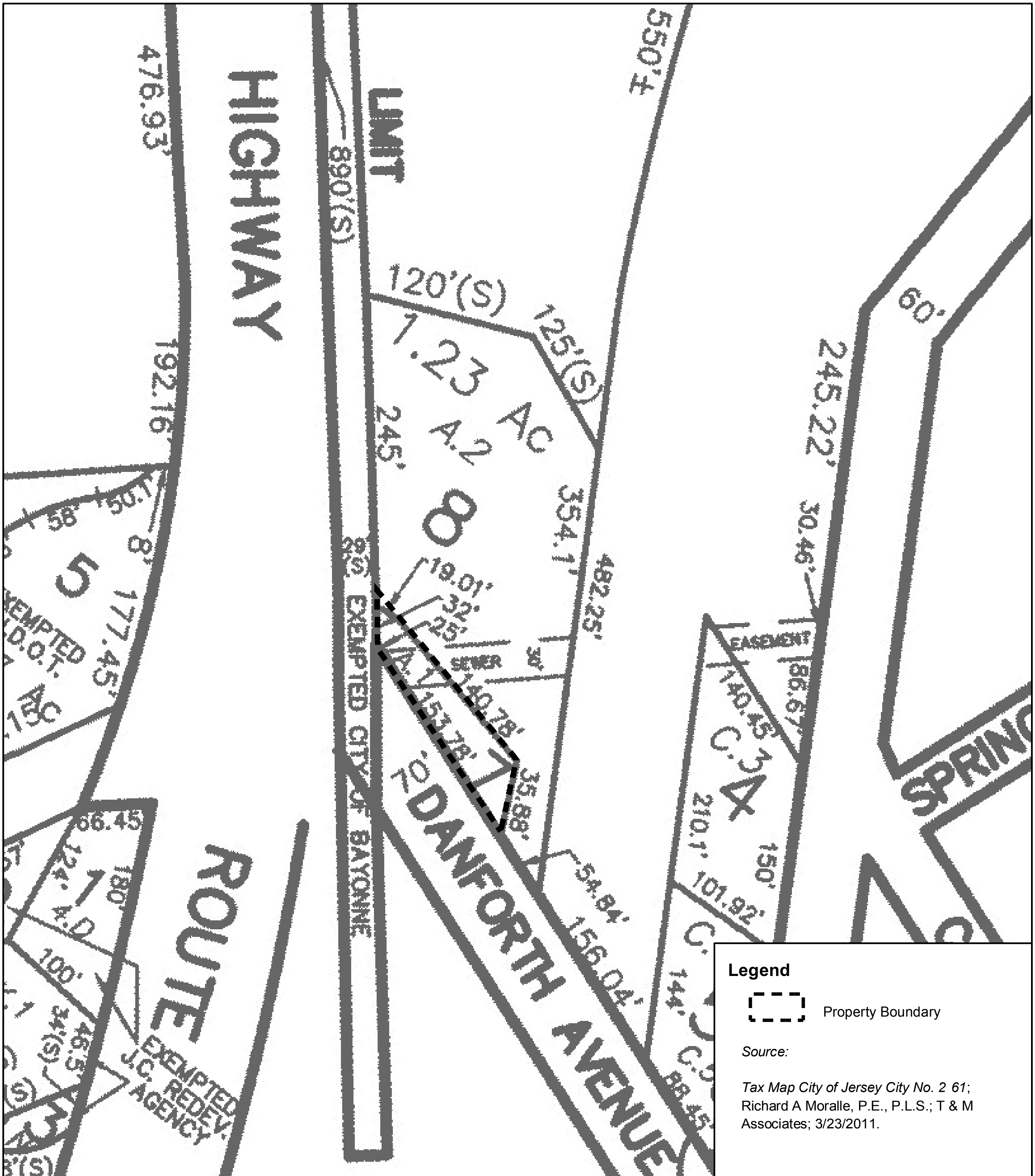
Exhibit A-2A
Metes and Bounds Description of Property

Block 26101, Lot 7
432 Danforth Ave
Jersey City, New Jersey

[Metes and Bounds Description to be included in final Deed Notice]

Exhibit Figure A-2B
Tax Map

Block 26101, Lot 7
432 Danforth Ave
Jersey City, New Jersey



Legend

Property Boundary

Source:

Tax Map City of Jersey City No. 2 61; Richard A Moralle, P.E., P.L.S.; T & M Associates; 3/23/2011.

100 0 100

Scale in Feet

N

amec

ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

DRAFT

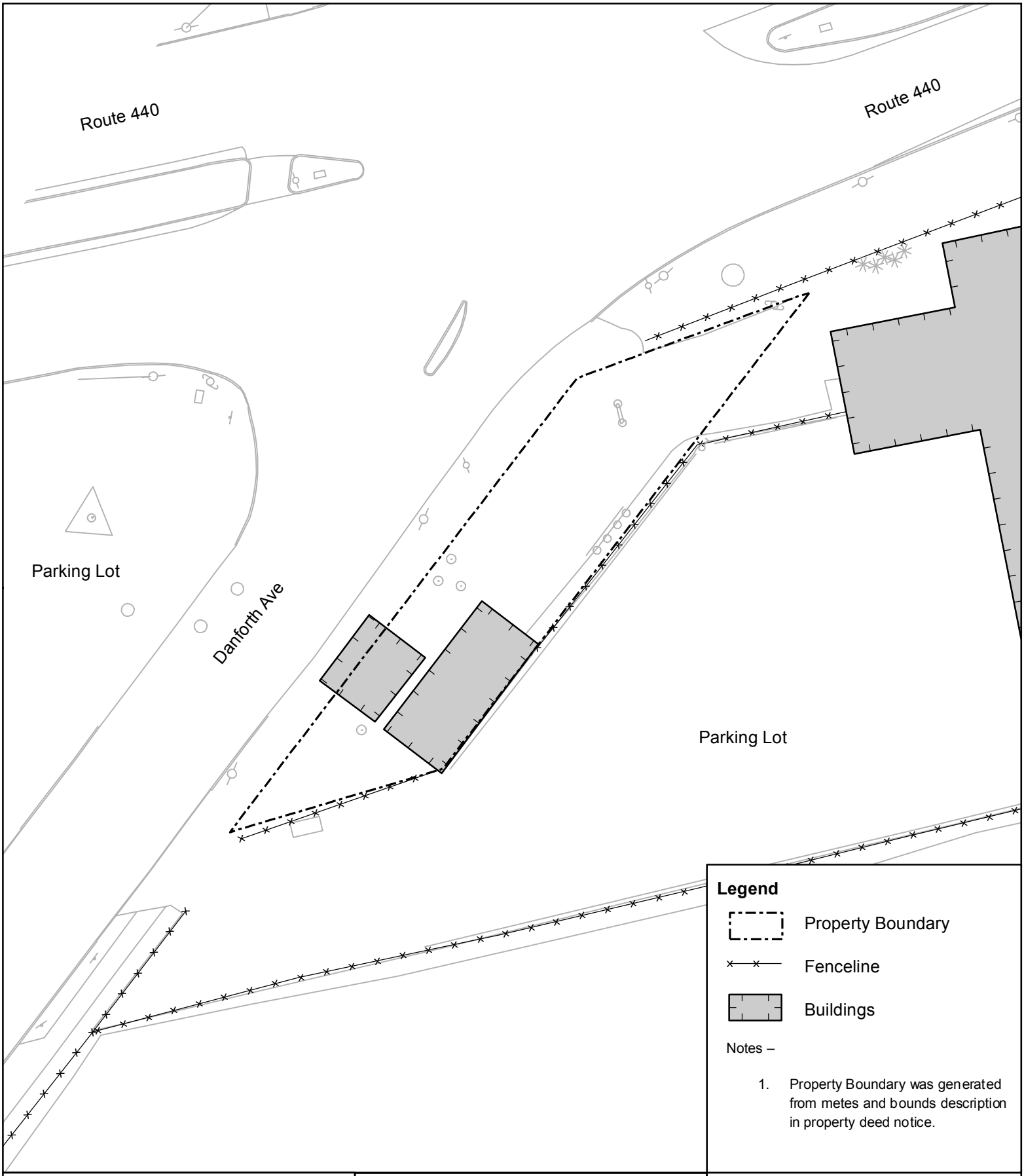
Exhibit A-2B: Tax Map

Block 26101, Lot 7
Jersey City, New Jersey

PROJ. NO.	3480130371	12/18/2014	REV.
Created By	WSL	Checked By	JJH

Exhibit Figure A-3
Property Map

Block 26101, Lot 7
432 Danforth Ave
Jersey City, New Jersey



40 0 40

Scale In Feet

ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

DRAFT

Exhibit A-3: Property Map

Block 26101 Lot 7
Jersey City, New Jersey

PROJ. NO.	3480110271	12/18/2014	REV.
Created By	WSL	Checked By	JJH

EXHIBIT B

B-1: Restricted Area Map and Engineering Controls

B-2: Restricted Area Data Table

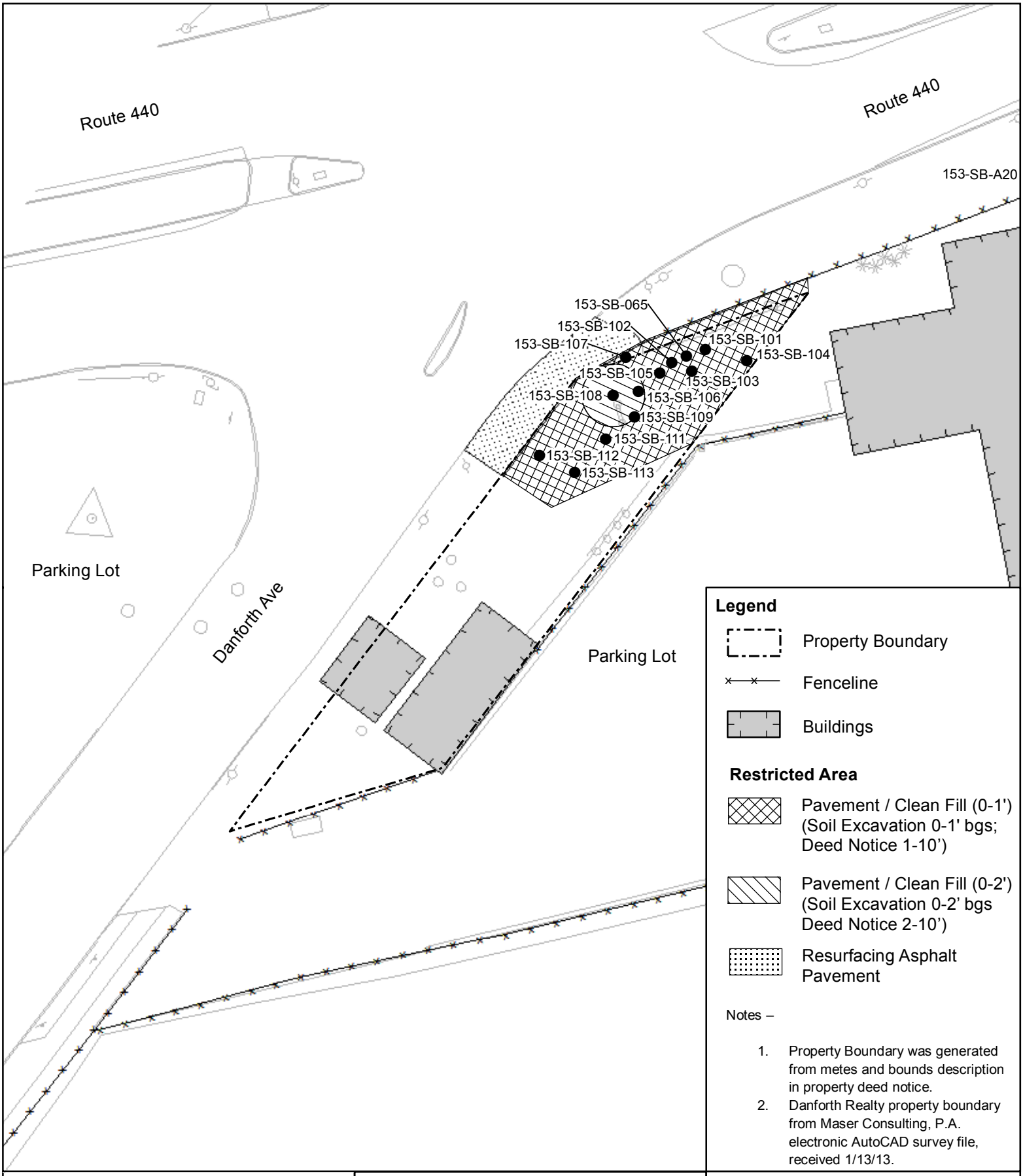
Block 26101, Lot 7
432 Danforth Ave
Jersey City, New Jersey

Exhibit B-1 includes maps that illustrate the Restricted Area and engineering/institutional controls and soil sample locations.

Exhibit B-2 includes data table which identifies the Restricted Area containing soils that are in excess of NJDEP unrestricted use soil remediation standards or criteria.

Exhibit Figures B-1A
Restricted Area Map

Block 26101, Lot 7
432 Danforth Ave
Jersey City, New Jersey



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Scale In Feet

amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

DRAFT

Exhibit B-1A: Restricted Area Map

Block 26101 Lot 7
Jersey City, New Jersey

PROJ. NO.	3480110271	12/11/2014	REV.
Created By	WSL	Checked By	JJH

Exhibit Figures B-1B
Engineering Controls

Block 26101, Lot 7
432 Danforth Ave
Jersey City, New Jersey

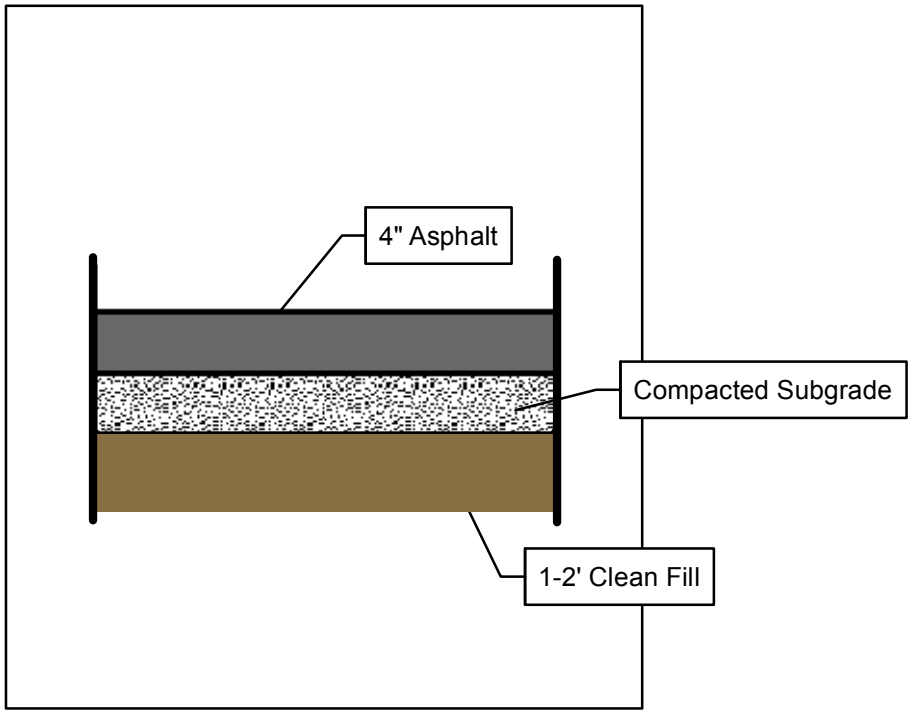

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Exhibit B-1B:
Engineering Controls
Block 26101 Lot 7
Jersey City, New Jersey

PROJ. NO.	3480110271	11/18/2014	REV.
Created By	WSL	Checked By	JJH

Exhibit B-2
Restricted Area Data Table

Block 26101, Lot 7
432 Danforth Ave
Jersey City, New Jersey

B-2 Restricted Area Data Table

Block 26101, Lot 7
Jersey City, New Jersey

Location	Sample Elevation (Feet above msl)	Sample Depth (Feet)	CASR#	Parameter	Sample Date	Result (mg/kg)	Q	NJDEP Soil Criteria (mg/kg)
153-SB-065	8.8	2.5-3	18540-29-9	Hexavalent Chromium	2/15/2011	20.5		20
153-SB-065	6.3	5-5.5	18540-29-9	Hexavalent Chromium	2/15/2011	24		20
153-SB-065	4.8	6.5-7	18540-29-9	Hexavalent Chromium	2/15/2011	58		20
153-SB-101	9.3	2-2.5	18540-29-9	Hexavalent Chromium	05/02/2014	22		20
153-SB-102	9.3	2-2.5	18540-29-9	Hexavalent Chromium	05/02/2014	109		20
153-SB-102	7.3	4-4.5	18540-29-9	Hexavalent Chromium	05/02/2014	68.5		20
153-SB-102	7.3	4-4.5	18540-29-9	Hexavalent Chromium	05/05/2014	69.5		20
153-SB-102	5.3	6-6.5	18540-29-9	Hexavalent Chromium	05/02/2014	160		20
153-SB-105	5.3	6-6.5	18540-29-9	Hexavalent Chromium	06/12/2014	112		20
153-SB-106	10.3	0.5-1	18540-29-9	Hexavalent Chromium	06/12/2014	322*		20
153-SB-106	10.3	1-1.5	18540-29-9	Hexavalent Chromium	06/12/2014	146*		20
153-SB-107	10.3	0.5-1	18540-29-9	Hexavalent Chromium	06/12/2014	163*		20
153-SB-107	10.3	1-1.5	18540-29-9	Hexavalent Chromium	06/12/2014	169		20
153-SB-107	9.3	2-2.5	18540-29-9	Hexavalent Chromium	06/12/2014	24		20
153-SB-107	7.3	4-4.5	18540-29-9	Hexavalent Chromium	06/12/2014	122		20
153-SB-108	10.3	0.5-1	18540-29-9	Hexavalent Chromium	06/13/2014	48.9*		20
153-SB-108	10.3	1-1.5	18540-29-9	Hexavalent Chromium	06/13/2014	7000*		20
153-SB-109	10.3	0.5-1	18540-29-9	Hexavalent Chromium	06/13/2014	248*		20
153-SB-109	10.3	1-1.5	18540-29-9	Hexavalent Chromium	06/13/2014	576*		20
153-SB-109	7.3	4-4.5	18540-29-9	Hexavalent Chromium	06/13/2014	464		20
153-SB-111	10.8	0.5-1	18540-29-9	Hexavalent Chromium	06/13/2014	20.8*		20
153-SB-111	10.3	1-1.5	18540-29-9	Hexavalent Chromium	06/13/2014	125		20
153-SB-111	9.3	2-2.5	18540-29-9	Hexavalent Chromium	06/13/2014	106		20
153-SB-111	7.3	4-4.5	18540-29-9	Hexavalent Chromium	06/13/2014	227		20
153-SB-111	5.3	6-6.5	18540-29-9	Hexavalent Chromium	06/13/2014	126		20
153-SB-112	9.3	2-2.5	18540-29-9	Hexavalent Chromium	07/24/2014	27.6		20
153-SB-112	7.3	4-4.5	18540-29-9	Hexavalent Chromium	07/24/2014	137		20
153-SB-112	3.8	7.5-8	18540-29-9	Hexavalent Chromium	07/24/2014	250	J	20
153-SB-112	3.3	8-8.5	18540-29-9	Hexavalent Chromium	07/24/2014	24.4		20
153-SB-112	0.8	10.5-11	18540-29-9	Hexavalent Chromium	07/24/2014	55.6		20
153-SB-113	4.8	6.5-7	18540-29-9	Hexavalent Chromium	07/24/2014	68.3		20

Notes:
Q: Qualifier
CASR#: Chemical Abstract Service Registry Number
NJDEP: New Jersey Department of Environmental Protection
mg/kg: milligrams per kilogram
Elevations are in feet above mean sea level using N.A.V.D. 1927
N.A.V.D.: North American Vertical Datum
msl: mean sea level
*Indicates that the sample location/depth is planned for excavation and replacement with clean fil

Prepared By: CMR 12/9/2011
Checked By: JJH 12/18/2014

EXHIBIT C
C-1: Institutional Controls
C-2: Engineering Controls

Block 26101, Lot 7
432 Danforth Ave
Jersey City, New Jersey

Exhibit C-1 includes a description of the deed notice as institutional control including general description of restricted area, objectives of restrictions, and monitoring and reporting requirements.

Exhibit C-2 includes a description of engineering controls and objectives, and operations and maintenance, monitoring and reporting requirements.

C-1 Deed Notice as Institutional Control

Block 26101, Lot 7
432 Danforth Ave
Jersey City, New Jersey

(A) General Description:

(1) The portion of the Property shown on Exhibit B-1A known as Block 26101, Lot 7 is a Restricted Area. The estimated size of the Restricted Area is approximately 3,000 square feet.

(2) Proper precautions must be taken (i.e., excavation or digging) that may penetrate the bottom of the engineering controls on the Restricted Area. See subsections 7A and 7B of the Deed Notice for directions on Alterations, Improvements, Disturbances, and Emergencies.

(3) The restrictions will prevent contact with soils above the NJDEP soil remediation standards or criteria.

(B) Description of Monitoring:

(1) Annual visual inspections of the Restricted Area will be conducted to determine whether any disturbances of the soil in the Restricted Area resulted in the unacceptable exposure to soil contamination;

(2) Annual visual inspections of the Restricted Area will be conducted to determine whether there have been any land use changes subsequent to the filing of this Deed Notice;

(3) Annual visual inspections of the Restricted Area will be conducted to determine whether the current land use on the property is consistent with the restrictions in this Deed Notice;

(4) A review will be conducted to determine if any newly promulgated or modified requirements of applicable regulations or laws apply to the site; and

(5) A review will be conducted to determine if any new standards, regulations, or laws apply to the site that might necessitate additional sampling in order to evaluate the protectiveness of the remedial action which includes this Deed Notice. If necessary, this additional sampling will be performed.

(C) Biennial Certification / Remedial Action Protectiveness:

A biennial remedial action protectiveness certification report form will be prepared and submitted to the NJDEP according to the schedule to be specified in a remedial action permit for soil.

C-2 Engineering Controls
Asphalt Pavement and Clean Soil

Block 26101, Lot 7
432 Danforth Ave
Jersey City, New Jersey

(A) General Description:

(1) The engineering controls consist of one to two feet of clean fill and an asphalt pavement cap (approximately 4 inches thick) across the Restricted Area. The existing asphalt cap will also be utilized as an engineering control.

(2) The objective of the engineering controls is to prevent direct contact with soils that are above the applicable NJDEP soil remediation standards or criteria.

(3) The engineering controls are intended to function as a barrier to underlying soils, which may contain contaminants above the applicable NJDEP soil remediation standards or criteria.

(B) Description of the operation and maintenance:

Visual inspections of the Property will be performed annually to document that:

(1) Each engineering control is in good condition and to determine its integrity, operability, and effectiveness;

(2) Each engineering control continues as designed and intended to protect the public health and safety and the environment;

(3) Each alteration, excavation or disturbance of any engineering control is timely and appropriately addressed to maintain the integrity of the engineering control (also, see subsections 7A and 7B of this Deed Notice for directions on Alterations, Improvements, Disturbances, and Emergencies); and,

(4) The engineering control is being inspected and maintained and its integrity remains so that the remedial action continues to be protective of the public health and safety and of the environment.

(C) Biennial Certification / Remedial Action Protectiveness:

A biennial remedial action protectiveness certification report form will be prepared and submitted to the NJDEP according to the schedule to be specified in a remedial action permit for soil. Components of the biennial report will include:

(1) An evaluation to determine whether or not the engineering controls are continuing to meet their original objective and intended function, and continue to operate as designed.

(2) An evaluation to determine whether or not the engineering controls continue to be protective of the public health and safety and of the environment.

APPENDIX K-2

DRAFT DEED NOTICE
NJDOT STATE HIGHWAY ROUTE 440 (RIGHT-OF-WAY)

NOTICE IN LIEU OF A DEED NOTICE

IN ACCORDANCE WITH N.J.S.A. 58:10B-13, THIS DOCUMENT IS TO BE DISTRIBUTED TO AFFECTED PARTIES.

Prepared by: _____
[Signature]

_____
[Print name below signature]

NOTICE IN LIEU OF A DEED NOTICE

This Notice in Lieu of a Deed Notice is made as of the _____ day of _____, _____, by the City of Jersey City (together with his/her/its/their successors and assigns, collectively "Person Responsible for Conduction the Remediation").

1. THE ROADWAY. The New Jersey Department of Transportation (NJDOT), PO Box 600, Trenton, NJ 08625, is the owner of the roadway designated as Route 440 on the tax map of the City of Jersey City, Hudson County; the New Jersey Department of Environmental Protection Program Interest Number (Preferred ID) for the contaminated site which includes portions of these Roadway is Hudson County Chromate Site No. 153 Program Interest (PI) #G000008767; and the roadway is more particularly described in Exhibit A, which is attached hereto and made a part hereof (the "Roadway").

2. REMEDIATION.

i. The Bureau of State Case Management (BCM) has approved this Notice in Lieu of a Deed Notice as an institutional control for the Roadway, which is part of the remediation of the Roadway.

ii. N.J.A.C. 7:26C-7 requires the Person Responsible for Conducting the Remediation, among other persons, to obtain a soil remedial action permit for the soil remedial action at the Roadway. That permit will contain the monitoring, maintenance and biennial certification requirements that apply to the Roadway.

3. SOIL CONTAMINATION. Honeywell International Inc. (Honeywell) has remediated contaminated soil at the Roadway, such that soil contamination remains in certain areas of the Roadway that contains contaminants in concentrations that do not allow for the unrestricted use of the Roadway; this soil contamination is described, including the type, concentration and specific location of such contaminants, in Exhibit B, which is attached hereto and made a part hereof. As a result, there is a statutory

requirement for this Deed Notice and engineering controls in accordance with N.J.S.A. 58:10B-13.

4. CONSIDERATION. In accordance with the remedial action for the site which included the Roadway, and in consideration of the terms and conditions of that remedial action, and other good and valuable consideration, Owner has agreed to subject the Roadway to certain statutory and regulatory requirements that impose restrictions upon the use of the Roadway, to restrict certain uses of the Roadway, and to provide notice to subsequent owners, lessees and operators of the restrictions and the monitoring, maintenance, and biennial certification requirements outlined in this Notice and required by law, as set forth herein.

5A. RESTRICTED AREAS. Due to the presence of contamination remaining at concentrations that do not allow for unrestricted use, the Owner has agreed, as part of the remedial action for the Roadway, to restrict the use of certain parts of the Roadway (the "Restricted Areas"); a narrative description of these restrictions is provided in Exhibit C, which is attached hereto and made a part hereof. The Owner has also agreed to maintain a list of these restrictions on site for inspection by governmental officials.

5B. RESTRICTED LAND USES. The following statutory land use restrictions apply to the Restricted Areas:

i. The Brownfield and Contaminated Site Remediation Act, N.J.S.A. 58:10B-12.g(10), prohibits the conversion of a contaminated site, remediated to non-residential soil remediation standards that require the maintenance of engineering or institutional controls, to a child care facility, or public, private, or charter school without the Department's prior written approval, unless a presumptive remedy is implemented; and

ii. The Brownfield and Contaminated Site Remediation Act, N.J.S.A. 58:10B-12.g(12), prohibits the conversion of a landfill, with gas venting systems and or leachate collection systems, to a single family residence or a child care facility without the Department's prior written approval.

5C. ENGINEERING CONTROLS. Due to the presence and concentration of these contaminants, the Owner has also agreed, as part of the remedial action for the Roadway, to the placement of certain engineering controls on the Roadway; a narrative description of these engineering controls is provided in Exhibit C. The NJDOT will be responsible for maintenance of the asphalt pavement road surface which serves as an engineering control. Responsibility for management and/or disposal of soils as part of road maintenance or infrastructure repairs is addressed in an Operations, Monitoring and Maintenance (OM&M) Plan to be developed between Honeywell and the NJDOT.

6A. CHANGE IN OWNERSHIP AND REZONING.

i. The Owner and the subsequent owners and lessees, shall cause all leases, grants, and other written transfers of an interest in the Restricted Areas to contain a provision expressly requiring all holders thereof to take the Roadway subject to the

restrictions contained herein and to comply with all, and not to violate any of the conditions of this Notice. Nothing contained in this Paragraph shall be construed as limiting any obligation of any person to provide any notice required by any law, regulation, or order of any governmental authority.

ii. The Owner and the subsequent owners shall provide written notice to the Department of Environmental Protection on a form provided by the Department and available at www.nj.gov/srp/forms within thirty (30) calendar days after the effective date of any conveyance, grant, gift, or other transfer, in whole or in part, of the owner's interest in the Restricted Area.

iii. The Owner and the subsequent owners shall provide written notice to the Department, on a form available from the Department at www.nj.gov/srp/forms, within thirty (30) calendar days after the owner's petition for or filing of any document initiating a rezoning of the Roadway to residential.

6B. SUCCESSORS AND ASSIGNS. This Notice shall be binding upon Owner and upon Owner's successors and assigns, and subsequent owners, lessees and operators while each is an owner, lessee, or operator of the Roadway.

7A. ALTERATIONS, IMPROVEMENTS, AND DISTURBANCES.

i. The Owner and all subsequent owners and lessees shall notify any person, including, without limitation, tenants, employees of tenants, and contractors, intending to conduct invasive work or excavate within the Restricted Areas, of the nature and location of contamination in the Restricted Areas, and, of the precautions necessary to minimize potential human exposure to contaminants.

ii. Except as provided in Paragraph 7B, below, no person shall make, or allow to be made, any alteration, improvement, or disturbance in, to, or about the Roadway which disturbs any engineering control at the Roadway without first obtaining a soil remedial action permit modification pursuant to N.J.A.C. 7:26C-7. Nothing herein shall constitute a waiver of the obligation of any person to comply with all applicable laws and regulations including, without limitation, the applicable rules of the Occupational Safety and Health Administration.

iii. Notwithstanding subparagraph 7Aii., above, a soil remedial action permit modification is not required for any alteration, improvement, or disturbance provided that the owner, lessee or operator:

(A) Notifies the Department of Environmental Protection of the activity by calling the DEP Hotline, at 1-877-WARN-DEP or 1-877-927-6337, within twenty-four (24) hours after the beginning of each alteration, improvement, or disturbance;

(B) Restores any disturbance of an engineering control to pre-disturbance conditions within sixty (60) calendar days after the initiation of the alteration, improvement or disturbance;

(C) Ensures that all applicable worker health and safety laws and regulations are followed during the alteration, improvement, or disturbance, and during the restoration;

(D) Ensures that human exposure to contamination in excess of the remediation standards does not occur; and

(E) Describes, in the next biennial certification the nature of the alteration, improvement, or disturbance, the dates and duration of the alteration, improvement, or disturbance, the name of key individuals and their affiliations conducting the alteration, improvement, or disturbance, a description of the notice the Owner gave to those persons prior to the disturbance.

7B. EMERGENCIES. In the event of an emergency which presents, or may present, an unacceptable risk to the public health and safety, or to the environment, or immediate environmental concern, see N.J.S.A. 58:10C-2, any person may temporarily breach an engineering control provided that that person complies with each of the following:

i. Immediately notifies the Department of Environmental Protection of the emergency, by calling the DEP Hotline at 1-877-WARNDEP or 1-877-927-6337;

ii. Hires a Licensed Site Remediation Professional (unless the Restricted Areas includes an unregulated heating oil tank) to respond to the emergency;

iii. Limits both the actual disturbance and the time needed for the disturbance to the minimum reasonably necessary to adequately respond to the emergency;

iv. Implements all measures necessary to limit actual or potential, present or future risk of exposure to humans or the environment to the contamination;

v. Notifies the Department of Environmental Protection when the emergency or immediate environmental concern has ended by calling the DEP Hotline at 1-877-WARNDEP or 1-877-927-6337; and

vi. Restores the engineering control to the pre-emergency conditions as soon as possible, and provides notification to the Department of Environmental Protection within sixty (60) calendar days after completion of the restoration of the engineering control, including: (a) the nature and likely cause of the emergency; (b) the potential discharges of or exposures to contaminants, if any, that may have occurred; (c) the measures that have been taken to mitigate the effects of the emergency on human health and the environment; (d) the measures completed or implemented to restore the engineering control; and (e) the changes to the engineering control or Roadway

operation and maintenance plan to prevent reoccurrence of such conditions in the future.

8. TERMINATION OF NOTICE IN LIEU OF A DEED NOTICE.

i. This Notice in Lieu of a Deed Notice may be terminated only upon submission of a Termination of a Notice in Lieu of a Deed Notice, available at N.J.A.C. 7:26C Appendix C, to the Department of Environmental Protection and copying the affected parties associated with the Roadway, expressly terminating this Notice in Lieu of a Deed Notice.

ii. Within thirty (30) calendar days after the submission of a Termination of Notice in Lieu of a Deed Notice, the Person Responsible for Conducting the Remediation shall apply to the Department for termination of the soil remedial action permit pursuant to N.J.A.C. 7:26C-7.

9. ACCESS. The Owner, and the subsequent owners, lessees and operators agree to allow the Department, its agents and representatives access to the Roadway to inspect and evaluate the continued protectiveness of the remedial action that includes this Notice in Lieu of a Deed Notice and to conduct additional remediation to ensure the protection of the public health and safety and of the environment if the subsequent owners, lessees and operators, during their ownership, tenancy, or operation, and the Person Responsible for Conducting the Remediation fail to conduct such remediation pursuant to this Notice in Lieu of a Deed Notice as required by law. The Owner, and the subsequent owners and lessees, shall also cause all leases, subleases, grants, and other written transfers of an interest in the Restricted Areas to contain a provision expressly requiring that all holders thereof provide such access to the Department.

10. ENFORCEMENT OF VIOLATIONS.

i. This Notice in Lieu of a Deed Notice itself is not intended to create any interest in real estate in favor of the Department of Environmental Protection, nor to create a lien against the Roadway, but merely is intended to provide notice of certain conditions and restrictions on the Roadway and to reflect the regulatory and statutory obligations imposed as a conditional remedial action for this site.

ii. The restrictions provided herein may be enforceable solely by the Department against any person who violates this Notice in Lieu of a Deed Notice. To enforce violations of this Notice in Lieu of a Deed Notice, the Department may initiate one or more enforcement actions pursuant to N.J.S.A. 58:10-23.11, and N.J.S.A. 58:10C, and require additional remediation and assess damages pursuant to N.J.S.A. 58:10-23.11, and N.J.S.A. 58:10C.

11. SEVERABILITY. If any court of competent jurisdiction determines that any provision of this Notice in Lieu of a Deed Notice requires modification, such provision shall be deemed to have been modified automatically to conform to such requirements. If

a court of competent jurisdiction determines that any provision of this Notice in Lieu of a Deed Notice is invalid or unenforceable and the provision is of such a nature that it cannot be modified, the provision shall be deemed deleted from this instrument as though the provision had never been included herein. In either case, the remaining provisions of this Notice in Lieu of a Deed Notice shall remain in full force and effect.

12A. EXHIBIT A. Exhibit A includes the following maps of the Roadway and the vicinity:

i. Exhibit A-1: Vicinity Map - A map that identifies by name the roads, and other important geographical features in the vicinity of the Roadway (for example, USGS Quad map, Hagstrom County Maps);

ii. Exhibit A-2: Metes and Bounds Description - A tax map of lots and blocks and Roadway right-of-way as well as metes and bounds description of the restricted area within the Roadway, including reference to tax lot and block numbers for the adjacent properties to the Roadway and distances from nearby intersections;

iii. Exhibit A-3: Roadway Map - A scaled map of the Roadway, scaled at one inch to 200 feet or less, and if more than one map is submitted, the maps shall be presented as overlays, keyed to a base map; and the Roadway Map shall include diagrams of major surface topographical features such as buildings, roads, and parking lots.

12B. EXHIBIT B. Exhibit B includes the following descriptions of the Restricted Areas:

i. Exhibit B-1: Restricted Area Map - A separate map for each restricted area that includes:

(A) As-built diagrams of each engineering control, including caps, fences, slurry walls, (and, if any) ground water monitoring wells, extent of the ground water classification exception area, pumping and treatment systems that may be required as part of a ground water engineering control in addition to the Notice in Lieu of a Deed Notice

(B) As-built diagrams of any buildings, roads, parking lots and other structures that function as engineering controls; and

(C) Designation of all soil and sediment sample locations within the restricted areas that exceed any soil or sediment standard that are keyed into one of the tables described in the following paragraph.

ii. Exhibit B-2: Restricted Area Data Table - A separate table for each restricted area that includes either (A) or (B) through (F):

(A) Only for historic fill extending over the entire site or a portion of the site and for which analytical data are limited or do not exist, a narrative that states that historic fill is present at the site, a description of the fill material (e.g., ash, cinders, brick, dredge material), and a statement that such material may include, but is not limited to, contaminants such as PAHs and metals;

(B) Sample location designation from Restricted Area map (Exhibit B-1);

(C) Sample elevation based upon mean sea level;

(D) Name and chemical abstract service registry number of each contaminant with a concentration that exceeds the unrestricted use standard;

(E) The restricted and unrestricted use standards for each contaminant in the table; and

(F) The remaining concentration of each contaminant at each sample location at each elevation.

12C. EXHIBIT C. Exhibit C includes narrative descriptions of the institutional controls and engineering controls as follows:

i. Exhibit C-1: Notice in Lieu of a Deed Notice as Institutional Control: Exhibit C-1 includes a narrative description of the restriction and obligations of this Notice in Lieu of a Deed Notice that are in addition to those described above, as follows:

(A) Description and estimated size of the Restricted Areas as described above;

(B) Description of the restrictions on the Roadway by operation of this Notice in Lieu of a Deed Notice; and

(C) The objective of the restrictions.

ii. Exhibit C-2: Asphalt Pavement Cap: Exhibit C-2 includes a narrative description of the Asphalt Pavement Cap as follows:

(A) Description of the engineering control;

(B) The objective of the engineering control; and

(C) How the engineering control is intended to function.

EXHIBIT A

A-1 Vicinity Map
A-2 Metes and Bounds Description and Tax Map
A-3 Roadway Map

New Jersey State Highway 440 Right-of-Way
Jersey City, New Jersey

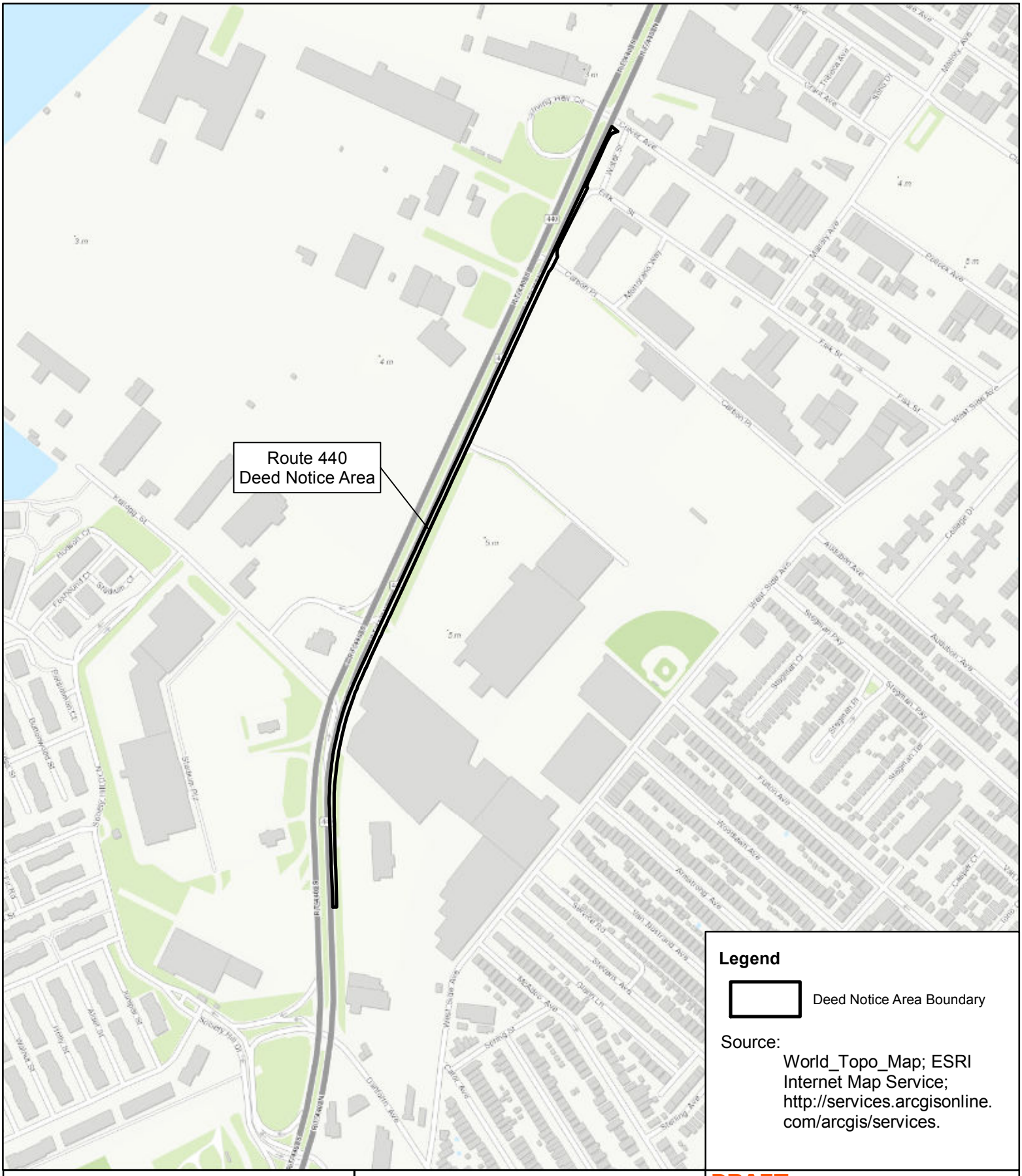
Exhibit A-1 consists of a road map for the vicinity of the Roadway

Exhibit A-2 (A-2A and A-2B) consists of metes and bounds descriptions for the Roadway and a Tax Map showing the Roadway right-of-ways and adjacent Block and Lot numbers.

Exhibit A-3 consists of a figure indicating major surface features and existing features for the Roadway.

Exhibit A-1
Vicinity Map

New Jersey State Highway 440 Right-of-Way
Jersey City, New Jersey



Legend

Deed Notice Area Boundary

Source:
World_Topo_Map; ESRI Internet Map Service; http://services.arcgisonline.com/arcgis/services.

500 0 500
Scale In Feet

amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

DRAFT

Exhibit A-1: Vicinity Map

New Jersey State Highway Route 440
Jersey City, New Jersey

PROJ. NO.	3480130371	12/16/2014	REV.
Created By	WSL	Checked By	JJH

Exhibit A-2A
Metes and Bounds Description of Roadway

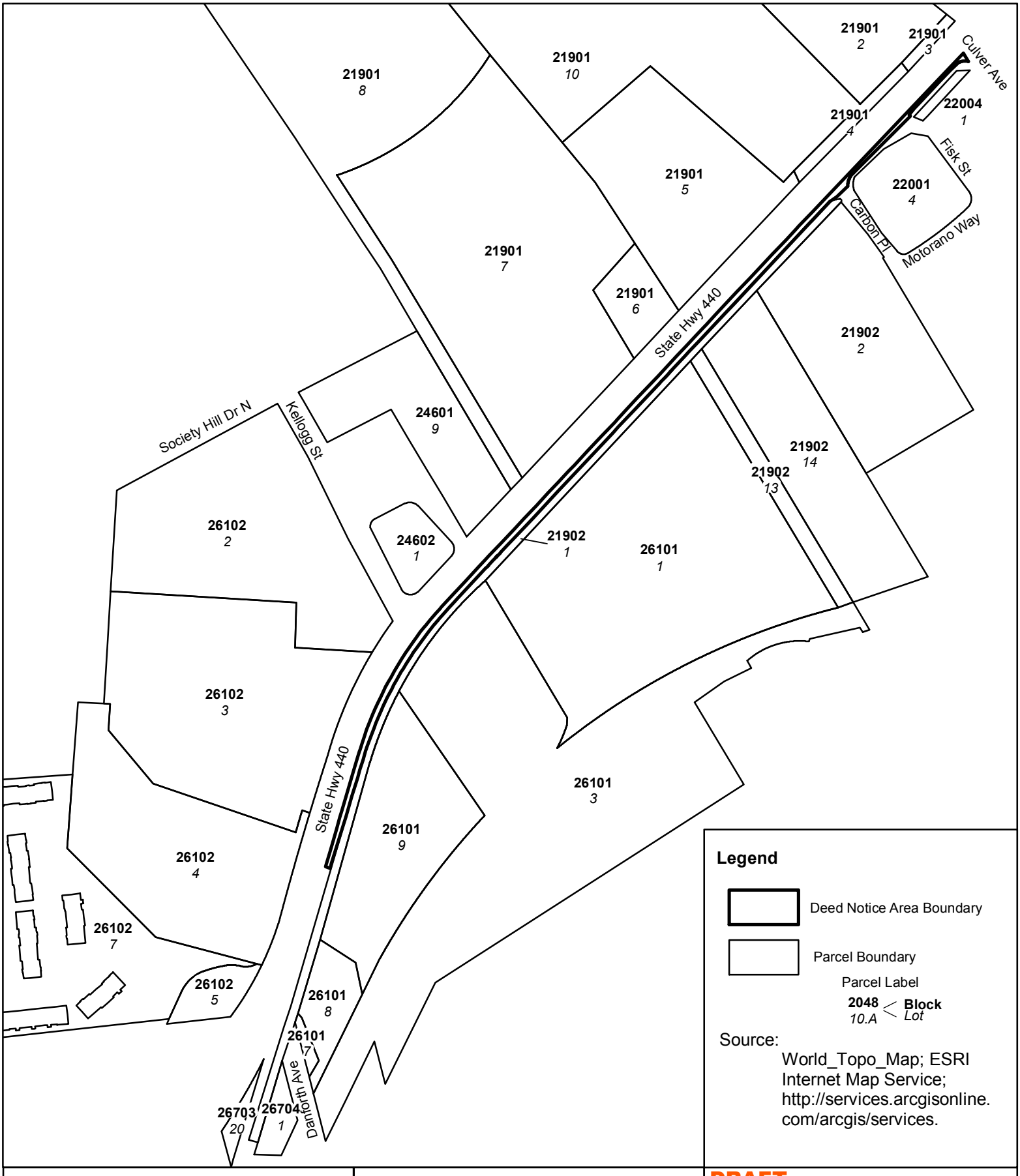
New Jersey State Highway 440 Right-of-Way
Jersey City, New Jersey

Metes and Bounds Description

[Metes and bounds description to be included in the final notice in lieu of deed notice]

Exhibit A-2B
Tax Map

New Jersey State Highway 440 Right-of-Way
Jersey City, New Jersey



amec

ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

DRAFT

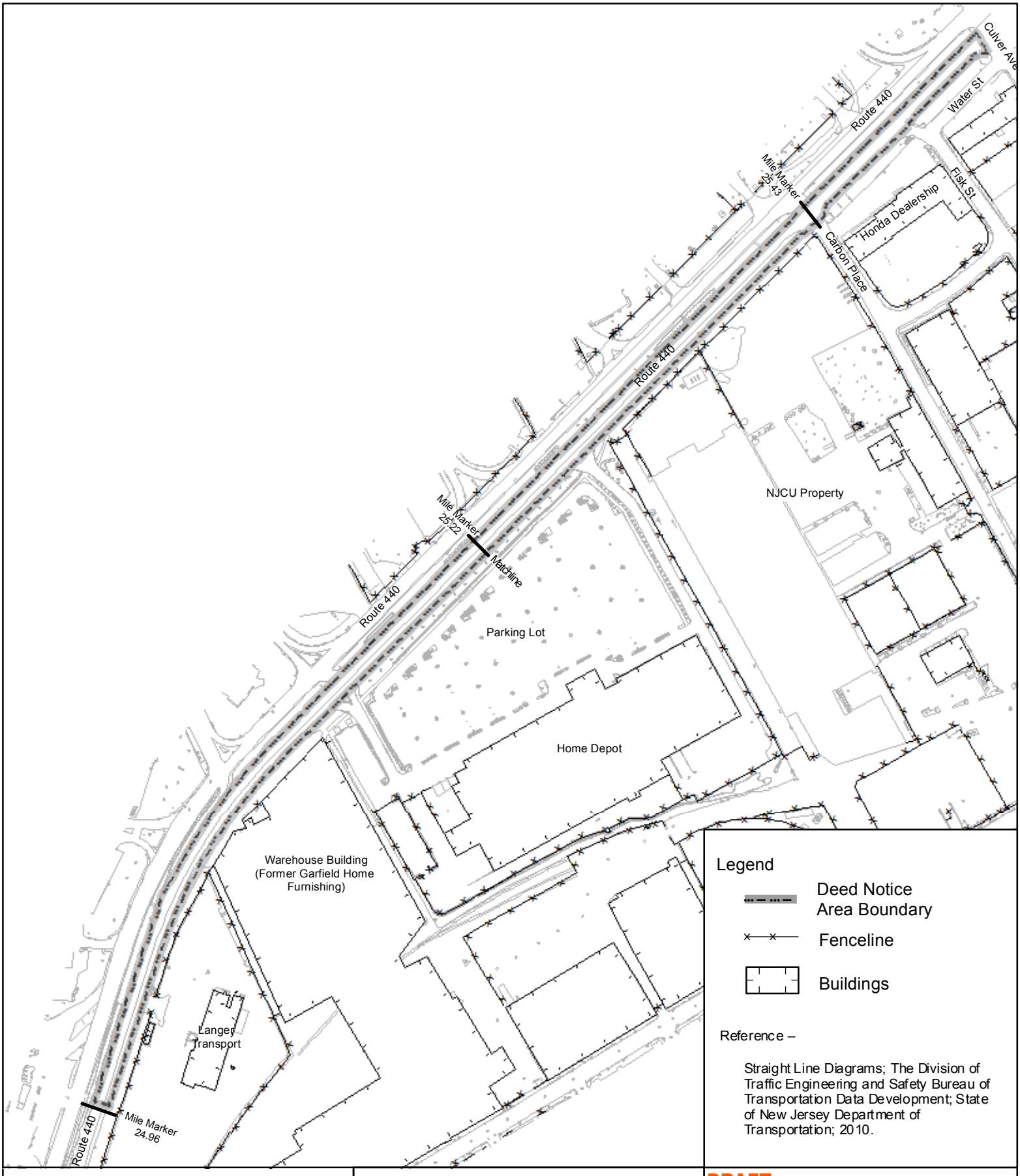
Exhibit A-2B: Tax Map

New Jersey State Highway Route 440
Jersey City, New Jersey

PROJ. NO.	3480130371	12/16/2014	REV.
Created By	WSL	Checked By	JJH

Exhibit A-3A through A-3C
Roadway Maps

New Jersey State Highway 440 Right-of-Way
Jersey City, New Jersey



Legend

- Deed Notice Area Boundary
- Fenceline
- Buildings

Reference –

Straight Line Diagrams; The Division of Traffic Engineering and Safety Bureau of Transportation Data Development; State of New Jersey Department of Transportation; 2010.

300 0 300

Scale In Feet

amec

ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

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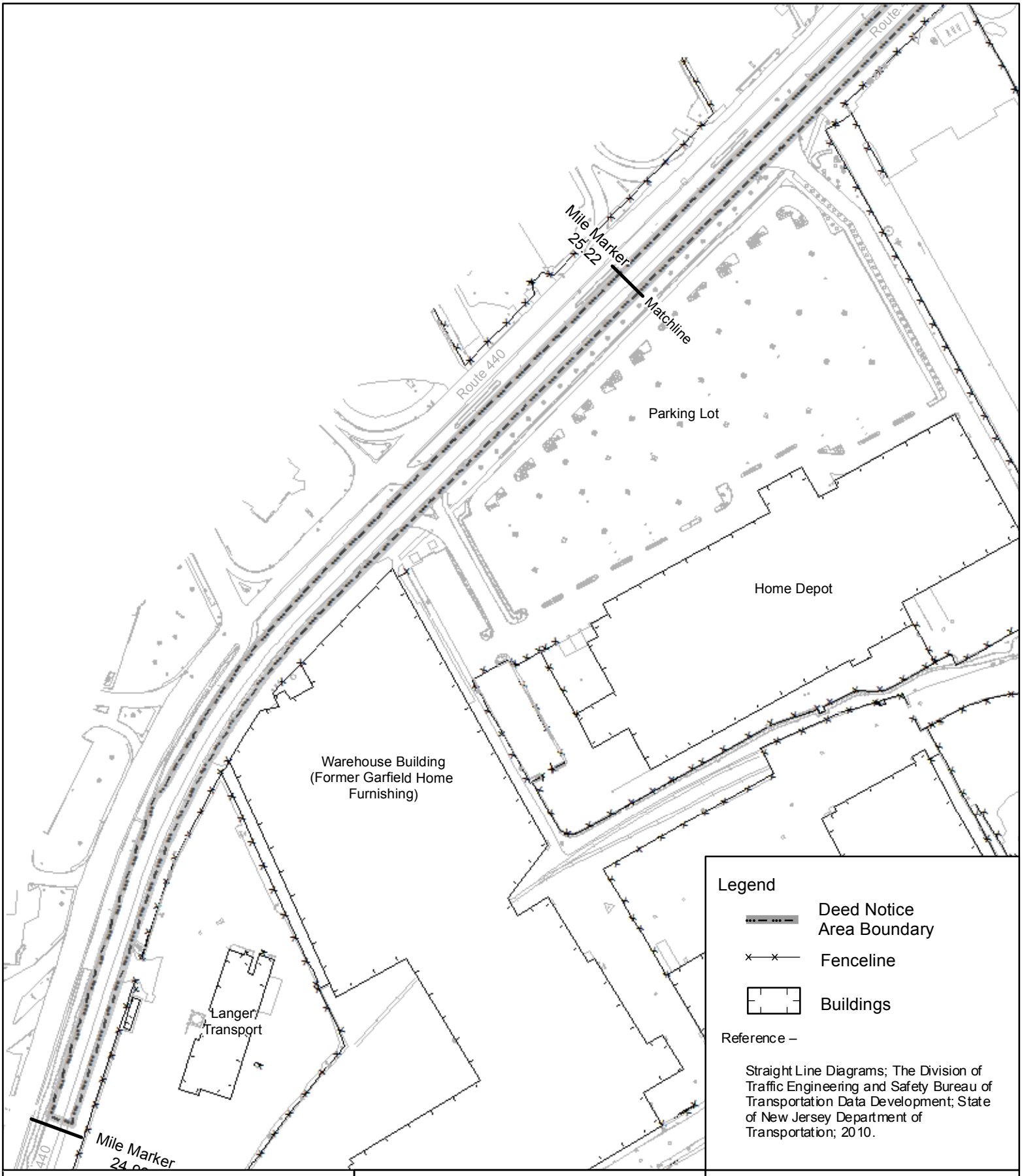
Exhibit A-3A: Property Key Map
New Jersey State Highway Route 440
Jersey City, New Jersey

PROJ. NO.	3480110271	12/15/2014	REV.
Created By	WSL	Checked By	JJH



200 0 200

Scale In Feet

amec

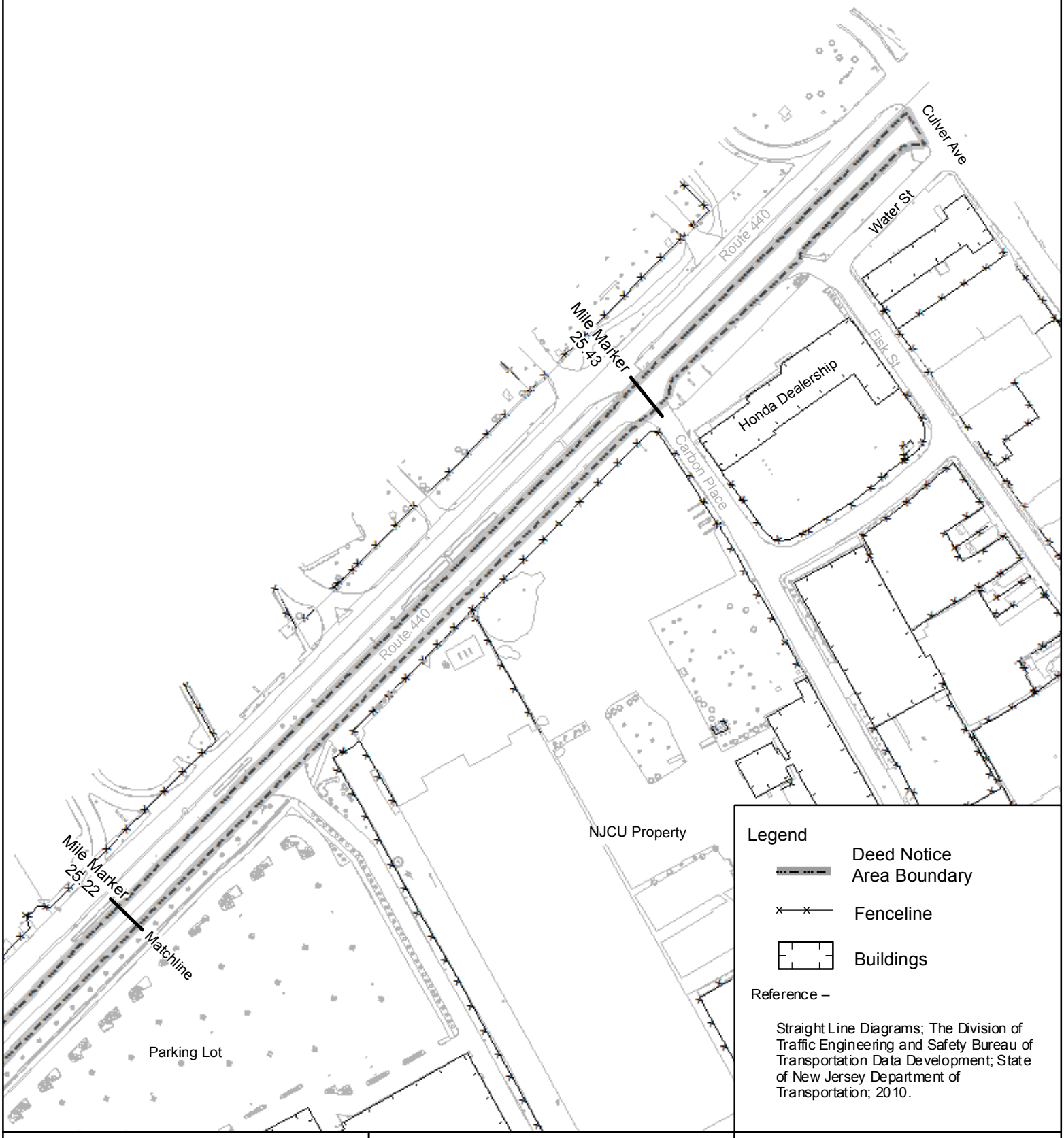
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

DRAFT

Exhibit A-3B: Property Map

Mile Marker 24.96 to 25.22
New Jersey State Highway Route 440
Jersey City, New Jersey

PROJ. NO.	3480110271	12/15/2014	REV.
Created By	WSL	Checked By	JJH



Legend

- Deed Notice Area Boundary
- Fenceline
- Buildings

Reference –

Straight Line Diagrams; The Division of Traffic Engineering and Safety Bureau of Transportation Data Development; State of New Jersey Department of Transportation; 2010.

200 0 200

Scale In Feet

amec

ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

DRAFT

Exhibit A-3C: Property Map

Mile Marker 25.22 to 25.43
New Jersey State Highway Route 440
Jersey City, New Jersey

PROJ. NO.	3480110271	12/15/2014	REV.
Created By	WSL	Checked By	JJH

EXHIBIT B

B-1A through B-1D: Restricted Area Map and Engineering Controls
B-2: Restricted Area Data Table

New Jersey State Highway 440 Right-of-Way
Jersey City, New Jersey

Exhibit B-1A is a key map of the restricted area.

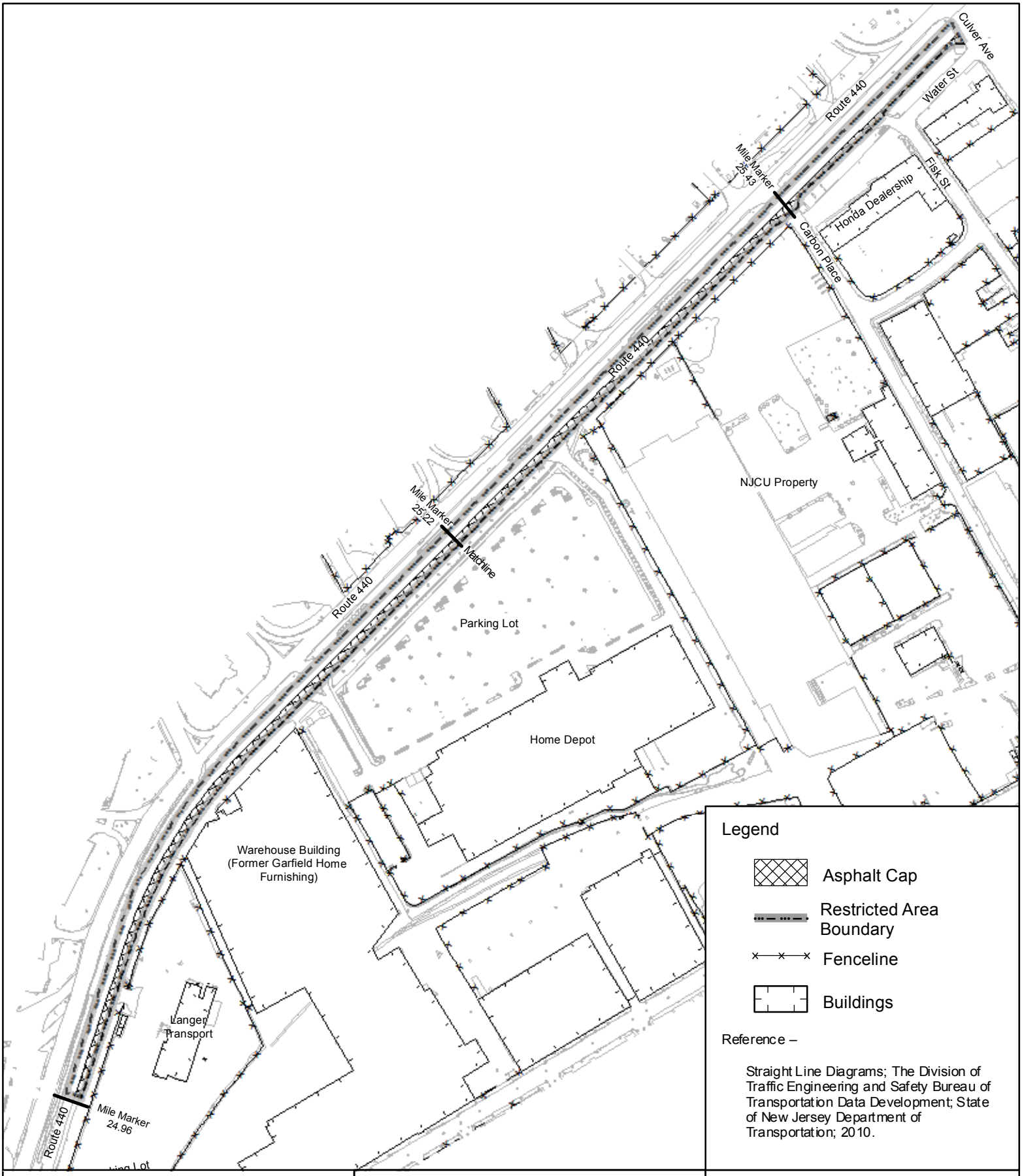
Exhibit B-1B is a map of the location of the engineering controls, a detail of the engineering control, and the location of soil samples from mile marker 24.96 to mile marker 25.22.

Exhibit B-1C is a map of the location of the engineering controls, a detail of the engineering control, and the location of soil samples from mile marker 25.22 to mile marker 25.43.

Exhibit B-2 includes a data table which identifies the Restricted Area containing soils that are in excess of NJDEP unrestricted use soil cleanup standards or criteria.

Exhibit B-1A through B-1D
Restricted Area Map and Engineering Control Detail

New Jersey State Highway 440 Right-of-Way
Jersey City, New Jersey



300 0 300

Scale In Feet

ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

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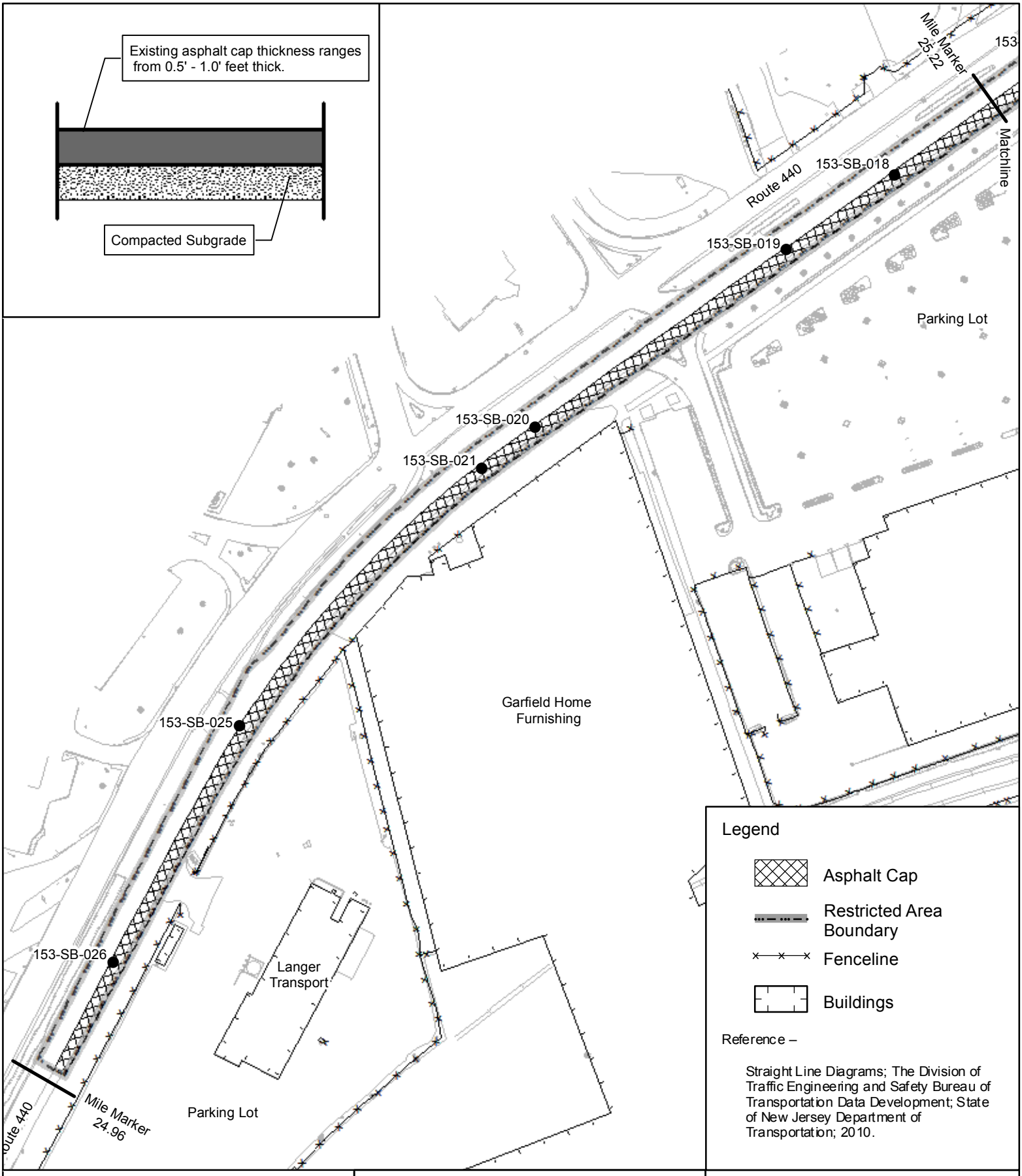
Exhibit B-1A: Restricted Area Key Map

New Jersey State Highway Route 440
Jersey City, New Jersey

PROJ. NO.	3480110271	12/15/2014	REV.
Created By	WSL	Checked By	JJH



150 0 150

Scale In Feet

amec

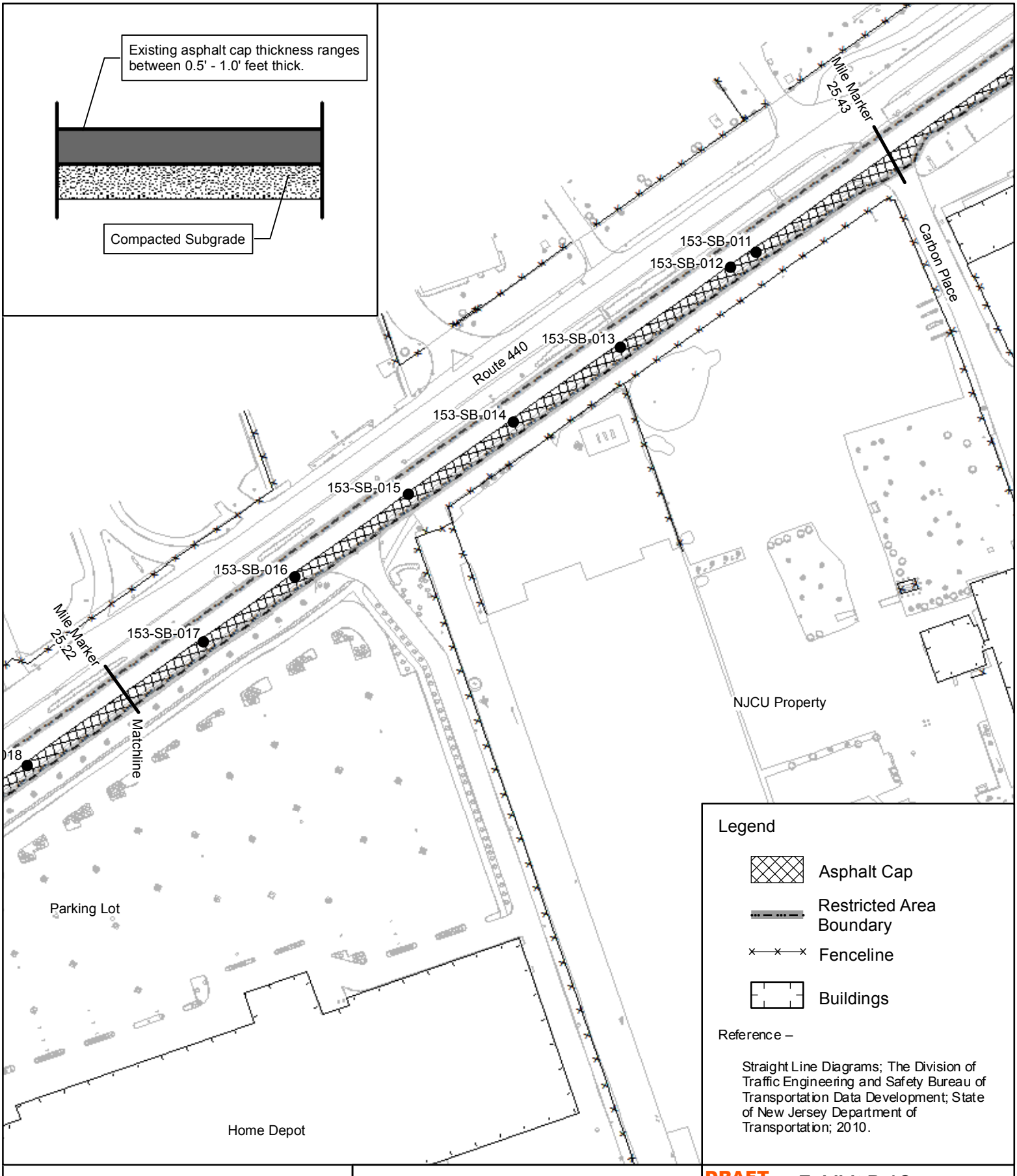
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

DRAFT

Exhibit B-1B: Restricted Area Map

Mile Marker 24.96 to 25.22
New Jersey State Highway Route 440
Jersey City, New Jersey

PROJ. NO.	3480110271	12/15/2014	REV.
Created By	WSL	Checked By	JJH



150 0 150

Scale In Feet

amec

ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

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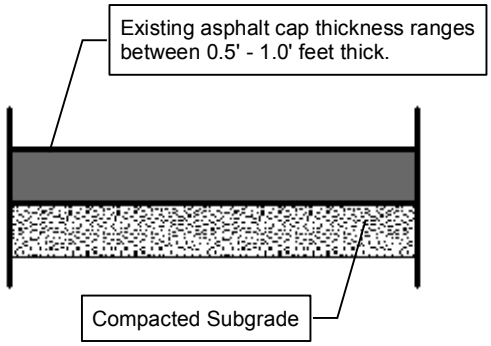
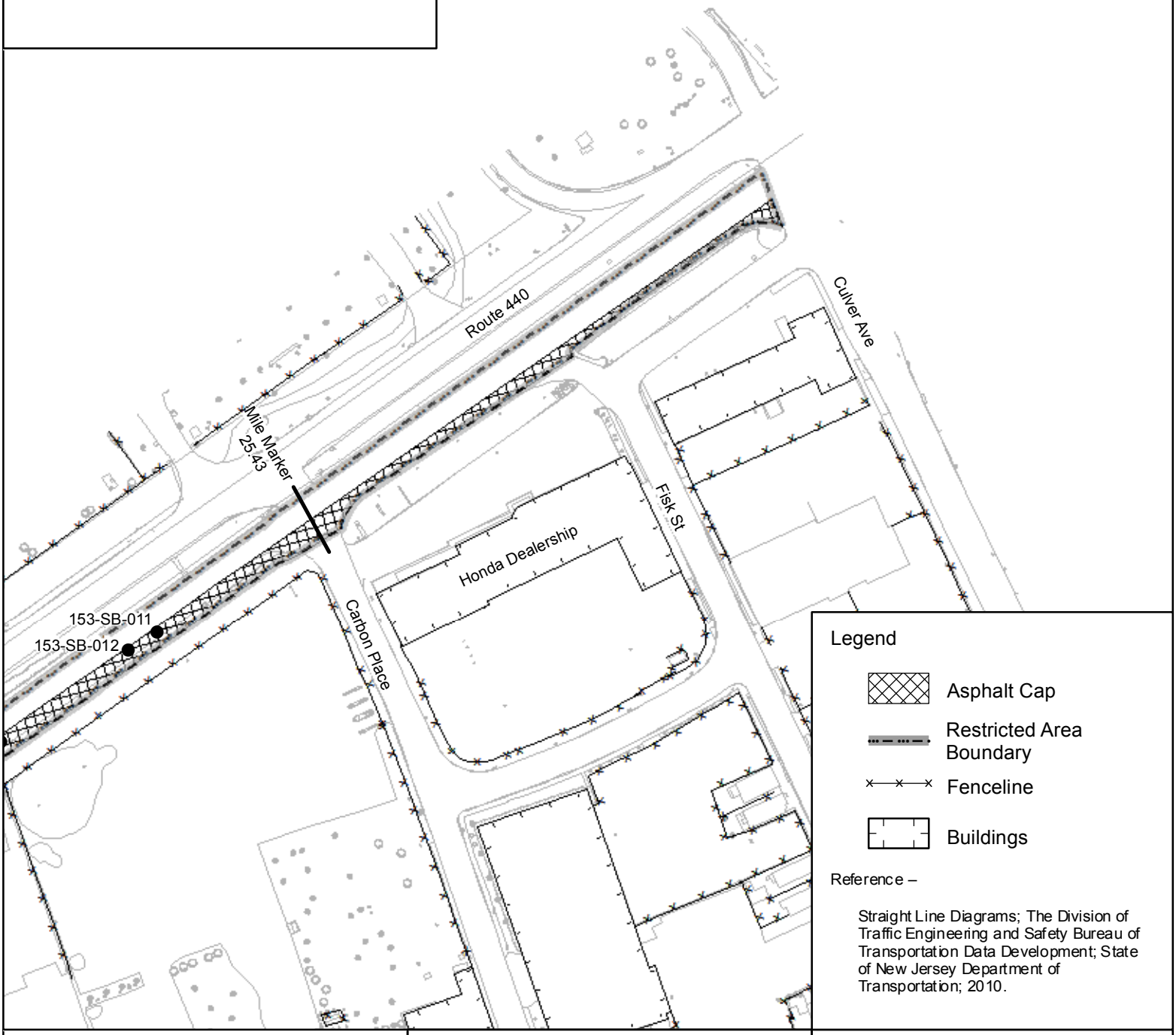
Exhibit B-1C: Restricted Area

Mile Marker 25.22 to 25.43
New Jersey State Highway Route 440
Jersey City, New Jersey

PROJ. NO.	3480110271	12/15/2014	REV.
Created By	WSL	Checked By	JJH





150 0 150

Scale In Feet

amec

ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

DRAFT

Exhibit B-1D:
Restricted Area
Mile Marker 25.43 to Culver Ave
New Jersey State Highway Route 440
Jersey City, New Jersey

PROJ. NO.	3480110271	12/15/2014	REV.
Created By	WSL	Checked By	JJH

Exhibit B-2
Restricted Area Data Table

New Jersey State Highway 440 Right-of-Way
Jersey City, New Jersey

Exhibit B-2
New Jersey State Highway 440 Right-of-Way
Jersey City, New Jersey

Location ID	Field Sample ID [1]	Date Sample	Sample Elevation (feet above mean sea level)	Parameter Name	Chemical Abstract Service Registry Number	Concentration (mg/kg)		NJDEP Unrestricted Use Standard (mg/kg) [2]
153-SB-011	153-SB-011-0204	3/16/2010	6.9	Hexavalent Chromium	18540-29-9	1040	J	20
153-SB-011	153-SB-011-0406	3/16/2010	4.9	Hexavalent Chromium	18540-29-9	50.9		20
153-SB-011	153-SB-011-0608	3/16/2010	3.4	Hexavalent Chromium	18540-29-9	59.6		20
153-SB-011	153-SB-011-0608DP	3/16/2010	3.4	Hexavalent Chromium	18540-29-9	62.4		20
153-SB-011	153-SB-011-0810	3/16/2010	0.4	Hexavalent Chromium	18540-29-9	69.7		20
153-SB-012	153-SB-012-0204	3/16/2010	7.1	Hexavalent Chromium	18540-29-9	1060	J	20
153-SB-012	153-SB-012-0406	3/16/2010	5.1	Hexavalent Chromium	18540-29-9	24.9		20
153-SB-012	153-SB-012-0608	3/16/2010	3.6	Hexavalent Chromium	18540-29-9	33.7	J	20
153-SB-012	153-SB-012-0810	3/16/2010	1.1	Hexavalent Chromium	18540-29-9	28.1		20
153-SB-013	153-SB-013-0204	3/15/2010	8.4	Hexavalent Chromium	18540-29-9	196		20
153-SB-013	153-SB-013-0608	3/15/2010	3.9	Hexavalent Chromium	18540-29-9	25.7		20
153-SB-014	153-SB-014-0608	3/15/2010	4.7	Hexavalent Chromium	18540-29-9	81.4		20
153-SB-014	153-SB-014-0810	3/15/2010	2.7	Hexavalent Chromium	18540-29-9	208		20
153-SB-014	153-SB-014-1012	3/15/2010	0.7	Hexavalent Chromium	18540-29-9	189	J	20
153-SB-015	153-SB-015-0406	3/16/2010	8.2	Hexavalent Chromium	18540-29-9	121		20
153-SB-015	153-SB-015-0608	3/16/2010	5.7	Hexavalent Chromium	18540-29-9	56.9	J	20
153-SB-015	153-SB-015-0810	3/16/2010	3.2	Hexavalent Chromium	18540-29-9	111		20
153-SB-015	153-SB-015-1012	3/16/2010	1.2	Hexavalent Chromium	18540-29-9	128	J	20
153-SB-015	153-SB-015-1214	3/16/2010	-0.3	Hexavalent Chromium	18540-29-9	399	J	20
153-SB-015	153-SB-015-1416	3/16/2010	-2.8	Hexavalent Chromium	18540-29-9	149	J	20
153-SB-016	153-SB-016-0608	3/15/2010	6.6	Hexavalent Chromium	18540-29-9	38.4		20
153-SB-016	153-SB-016-0810	3/15/2010	4.6	Hexavalent Chromium	18540-29-9	109		20
153-SB-016	153-SB-016-1012	3/15/2010	2.1	Hexavalent Chromium	18540-29-9	160		20
153-SB-016	153-SB-016-1214	3/15/2010	0.6	Hexavalent Chromium	18540-29-9	151		20
153-SB-016	153-SB-016-1416	3/15/2010	-1.9	Hexavalent Chromium	18540-29-9	153		20
153-SB-016	153-SB-016-1618	3/15/2010	-3.9	Hexavalent Chromium	18540-29-9	54		20
153-SB-016	153-SB-016-1820	3/15/2010	-5.9	Hexavalent Chromium	18540-29-9	59.4		20
153-SB-017	153-SB-017-0204	3/15/2010	8.8	Hexavalent Chromium	18540-29-9	20.6		20
153-SB-017	153-SB-017-0406	3/15/2010	7.8	Hexavalent Chromium	18540-29-9	21.4		20
153-SB-017	153-SB-017-0810	3/15/2010	3.8	Hexavalent Chromium	18540-29-9	71.7		20
153-SB-017	153-SB-017-1012	3/15/2010	1.8	Hexavalent Chromium	18540-29-9	128		20
153-SB-017	153-SB-017-1214	3/15/2010	-1.7	Hexavalent Chromium	18540-29-9	29.8	J	20
153-SB-017	153-SB-017-1416	3/15/2010	-3.2	Hexavalent Chromium	18540-29-9	31.3		20
153-SB-018	153-SB-018-0204	3/15/2010	8.2	Hexavalent Chromium	18540-29-9	115		20
153-SB-018	153-SB-018-0406	3/15/2010	6.2	Hexavalent Chromium	18540-29-9	44		20
153-SB-018	153-SB-018-0608	3/15/2010	3.7	Hexavalent Chromium	18540-29-9	64.1	J	20
153-SB-018	153-SB-018-1012	3/15/2010	0.2	Hexavalent Chromium	18540-29-9	42.1		20
153-SB-019	153-SB-019-0608	3/15/2010	4	Hexavalent Chromium	18540-29-9	36.1	J	20
153-SB-019	153-SB-019-0810	3/15/2010	1	Hexavalent Chromium	18540-29-9	83.1	J	20
153-SB-020	153-SB-020-0002	3/15/2010	7.7	Hexavalent Chromium	18540-29-9	139		20
153-SB-020	153-SB-020-0204	3/15/2010	6.2	Hexavalent Chromium	18540-29-9	25.5		20
153-SB-020	153-SB-020-0608	3/15/2010	2.2	Hexavalent Chromium	18540-29-9	50	J	20
153-SB-021	153-SB-021-0406	3/16/2010	4.7	Hexavalent Chromium	18540-29-9	60.9		20
153-SB-025	153-SB-025-0608	3/15/2010	3	Hexavalent Chromium	18540-29-9	104		20
153-SB-025	153-SB-025-1012	3/15/2010	-0.5	Hexavalent Chromium	18540-29-9	92.5		20
153-SB-026	153-SB-026-0608	3/16/2010	6.1	Hexavalent Chromium	18540-29-9	33	J	20
153-SB-026	153-SB-026-0810	3/16/2010	4.6	Hexavalent Chromium	18540-29-9	31.6	J	20
153-SB-026	153-SB-026-1012	3/16/2010	2.6	Hexavalent Chromium	18540-29-9	39.9	J	20

Notes

J: Data indicates the presence of a compound that meets the identification criteria. The concentration given is an approximate value.

DP: Duplicate Sample

mg/kg: milligrams per Kilogram

(1) The last four digits of each Field Sample ID represent the sample depth in feet below ground surface. For example, 0002 indicates a sample collected between 0 and 2 feet below ground surface.

(2) The Unrestricted Use Standard refers to the current NJDEP Soil Cleanup Criteria for hexavalent chromium of 20 mg/kg

Prepared By:CMR 12/9/2011
Checked By:JJH 12/19/2014

EXHIBIT C

C-1: Institutional Controls
C-2: Engineering Controls

New Jersey State Highway 440 Right-of-Way
Jersey City, New Jersey

Exhibit C-1 includes a description of the Notice in Lieu of a Deed Notice as institutional control including monitoring and reporting requirements.

Exhibit C-2 includes a description of engineering controls, operations and maintenance, monitoring and reporting requirements.

Exhibit C-1
Notice in Lieu of a Deed Notice as Institutional Control

New Jersey State Highway 440 Right-of-Way
Jersey City, New Jersey

(A) General Description:

(1) The portion of each Roadway shown on Exhibit B-1A known as New Jersey State Highway 440 is a Restricted Areas. The estimated size of the Restricted Areas is approximately 139,000 square feet (or approximately 3.2 acres) and extends from the ground surface to a maximum depth of 20 feet bgs.

(2) Proper precautions must be taken (i.e., excavation or digging) that may penetrate the bottom of the engineering controls in the Restricted Areas. See subsections 7A and 7B of the Deed Notice for directions on Alterations, Improvements, Disturbances, and Emergencies.

(3) The restrictions will prevent contact with soils above the NJDEP Soil Remediation Standards.

(B) Description of monitoring:

(1) Annual visual inspections of the Restricted Areas will be conducted to document that the engineering controls are in good condition and to determine whether any disturbances of the soil in the Restricted Areas may have resulted in unacceptable exposure to the soil contamination;

(2) Annual visual inspections of the Restricted Areas will be conducted to determine whether there have been any land use changes subsequent to the submission of this Notice in Lieu of a Deed Notice to the NJDEP and affected parties or the most recent biennial certification, whichever is more recent;

(3) Annual visual inspections of the Restricted Areas will be conducted to determine whether the current land use on the Roadway is consistent with the restrictions in this Notice in Lieu of a Deed Notice;

(4) A review will be conducted to determine if any newly promulgated or modified requirements of applicable regulations or laws apply to the Roadway; and

(5) A review will be conducted to determine if any new standards, regulations, or laws apply to the site that might necessitate additional sampling in order to evaluate the protectiveness of the remedial action which includes this Notice in Lieu of a Deed Notice. If necessary, this additional sampling will be performed.

(C) Biennial certification items:

A Remedial Action Protectiveness / Biennial Certification Form - Soil will be submitted to the NJDEP on a biennial basis. The Remedial Action Protectiveness / Biennial Certification Form - Soil will include the following:

(1) A determination that all conditions set forth in Notice in Lieu of a Deed Notice subparagraph 12C have been adhered to, including evaluation of any available documents created as a result of changes in land use or incidents.

(2) A determination whether or not the land use at the Roadway has remained consistent with the restrictions in the Notice in Lieu of a Deed Notice.

(3) A determination whether or not the Notice in Lieu of a Deed Notice continues to be protective of the public health and safety and of the environment.

Exhibit C-2
Engineering Controls:
Asphalt Pavement Cap

New Jersey State Highway 440 Right-of-Way
Jersey City, New Jersey

(A) General Description:

(1) Engineering controls for this portion of the Roadway consist of four inches of existing asphalt;

(2) The objective of the engineering controls is to prevent direct contact with soils containing contaminant concentrations above the NJDEP SRS.

(3) The engineering control is intended to function as a barrier to underlying soils.

(B) Description of the operation and maintenance:

Visual inspections of the Roadway will be performed annually to document that:

(1) The engineering control is in good condition and to document the integrity, operability, and effectiveness of the engineering control;

(2) The engineering control continues to function as designed and intended in order to protect the public health and safety and the environment;

(3) Each alteration, excavation or disturbance of any engineering control is timely and appropriately addressed to maintain the integrity of the engineering control (also, see subsections 7A and 7B of this Notice in Lieu of a Deed Notice for directions on Alterations, Improvements, Disturbances, and Emergencies);

(4) The integrity of each institutional control is maintained so that the remedial action continues to be protective of the public health and safety and of the environment;

(5) Records of the inspections are maintained as listed in the applicable Remedial Action Permit. Should the visual inspection indicate that other activities are necessary, those activities will be listed and executed; and

(6) A review of any new standards, regulations, or laws will be conducted to evaluate the protectiveness of the remedial action, which includes this Notice in Lieu of a Deed Notice. Should the review indicate that other activities are necessary, those activities will be listed and executed and documented in the next Remedial Action Protectiveness / Biennial Certification Form as applicable in the Remedial Action Permit.

(C) Biennial certification items:

A Remedial Action Protectiveness / Biennial Certification Form - Soil along with the required information that accompanies the form will be submitted to the NJDEP on a biennial basis. Components of the Remedial Action Protectiveness / Biennial Certification Form - Soil include, but are not limited to the following:

(1) An evaluation of any statutory or regulatory changes that are relevant to the Notice in Lieu of a Deed Notice since the last submittal of the Remedial Action Protectiveness / Biennial Certification Form - Soil, including all relevant modifications to the remediation standards and guidance related to soil.

(2) A determination if the Roadway use has changed and if so, whether a new notice needs to be filed.

(3) A determination if the zoning of the Roadway changed.

(4) An evaluation to determine whether the engineering control continues to operate as designed and is meeting its original objectives and intended functions.

(5) An evaluation to determine whether the engineering control continues to be protective of the public health and safety and of the environment.

(6) A description of the results of inspections performed.

(7) A determination if any disturbances to the engineering controls have occurred, how they were restored, if the disturbances render the remedial action no longer protective of public health, safety and of the environment, and a description of all activities performed as part of the disturbance in accordance with subparagraphs 7A and 7B of the Notice in Lieu of a Deed Notice.

(8) A description of any remedial actions performed.

APPENDIX K-3

DRAFT DEED NOTICE
CITY OF JERSEY CITY RIGHT-OF-WAY
PORTION OF WATER STREET, FISK STREET, CARBON PLACE,
AND DANFORTH AVENUE

NOTICE IN LIEU OF A DEED NOTICE

IN ACCORDANCE WITH N.J.S.A. 58:10B-13, THIS DOCUMENT IS TO BE DISTRIBUTED TO AFFECTED PARTIES.

Prepared by: _____
[Signature]

_____
[Print name below signature]

NOTICE IN LIEU OF A DEED NOTICE

This Notice in Lieu of a Deed Notice is made as of the _____ day of _____, _____, by the City of Jersey City (together with his/her/its/their successors and assigns, collectively "Person Responsible for Conduction the Remediation").

1. THE ROADWAY. The City of Jersey City, City Hall, 280 Grove Street, Jersey City, NJ 07305, is the owner of the municipal roadways designated as Water Street, Fisk Street, Carbon Place, and Danforth Avenue on the tax map of the City of Jersey City, Hudson County; the New Jersey Department of Environmental Protection Program Interest Number (Preferred ID) for the contaminated site which includes portions of these roadways is Hudson County Chromate Site No. 153 Program Interest (PI) #G000008767; and the roadways are more particularly described in Exhibit A, which is attached hereto and made a part hereof (the "Roadways").

2. REMEDIATION.

i. The Bureau of State Case Management (BCM) has approved this Notice in Lieu of a Deed Notice as an institutional control for the Roadway, which is part of the remediation of the Roadway.

ii. N.J.A.C. 7:26C-7 requires the Person Responsible for Conducting the Remediation, among other persons, to obtain a soil remedial action permit for the soil remedial action at the Roadways. That permit will contain the monitoring, maintenance and biennial certification requirements that apply to the Roadways.

3. SOIL CONTAMINATION. Honeywell International Inc. (Honeywell) has remediated contaminated soil at the Roadways, such that soil contamination remains in certain areas of the Roadway that contains contaminants in concentrations that do not allow for the unrestricted use of the Roadways; this soil contamination is described, including the type, concentration and specific location of such contaminants, in Exhibit

B, which is attached hereto and made a part hereof. As a result, there is a statutory requirement for this Deed Notice and engineering controls in accordance with N.J.S.A. 58:10B-13.

4. CONSIDERATION. In accordance with the remedial action for the site which included the Roadways, and in consideration of the terms and conditions of that remedial action, and other good and valuable consideration, Owner has agreed to subject the Roadways to certain statutory and regulatory requirements that impose restrictions upon the use of the Roadways, to restrict certain uses of the Roadways, and to provide notice to subsequent owners, lessees and operators of the restrictions and the monitoring, maintenance, and biennial certification requirements outlined in this Notice and required by law, as set forth herein.

5A. RESTRICTED AREAS. Due to the presence of contamination remaining at concentrations that do not allow for unrestricted use, the Owner has agreed, as part of the remedial action for the Roadways, to restrict the use of certain parts of the Roadways (the "Restricted Areas"); a narrative description of these restrictions is provided in Exhibit C, which is attached hereto and made a part hereof. The Owner has also agreed to maintain a list of these restrictions on site for inspection by governmental officials.

5B. RESTRICTED LAND USES. The following statutory land use restrictions apply to the Restricted Areas:

i. The Brownfield and Contaminated Site Remediation Act, N.J.S.A. 58:10B-12.g(10), prohibits the conversion of a contaminated site, remediated to non-residential soil remediation standards that require the maintenance of engineering or institutional controls, to a child care facility, or public, private, or charter school without the Department's prior written approval, unless a presumptive remedy is implemented; and

ii. The Brownfield and Contaminated Site Remediation Act, N.J.S.A. 58:10B-12.g(12), prohibits the conversion of a landfill, with gas venting systems and or leachate collection systems, to a single family residence or a child care facility without the Department's prior written approval.

5C. ENGINEERING CONTROLS. Due to the presence and concentration of these contaminants, the Owner has also agreed, as part of the remedial action for the Roadways, to the placement of certain engineering controls on the Roadways; a narrative description of these engineering controls is provided in Exhibit C.

6A. CHANGE IN OWNERSHIP AND REZONING.

i. The Owner and the subsequent owners and lessees, shall cause all leases, grants, and other written transfers of an interest in the Restricted Areas to contain a provision expressly requiring all holders thereof to take the Roadways subject to the restrictions contained herein and to comply with all, and not to violate any of the

conditions of this Notice. Nothing contained in this Paragraph shall be construed as limiting any obligation of any person to provide any notice required by any law, regulation, or order of any governmental authority.

ii. The Owner and the subsequent owners shall provide written notice to the Department of Environmental Protection on a form provided by the Department and available at www.nj.gov/srp/forms within thirty (30) calendar days after the effective date of any conveyance, grant, gift, or other transfer, in whole or in part, of the owner's interest in the Restricted Area.

iii. The Owner and the subsequent owners shall provide written notice to the Department, on a form available from the Department at www.nj.gov/srp/forms, within thirty (30) calendar days after the owner's petition for or filing of any document initiating a rezoning of the Roadway to residential.

6B. SUCCESSORS AND ASSIGNS. This Notice shall be binding upon Owner and upon Owner's successors and assigns, and subsequent owners, lessees and operators while each is an owner, lessee, or operator of the Roadways.

7A. ALTERATIONS, IMPROVEMENTS, AND DISTURBANCES.

i. The Owner and all subsequent owners and lessees shall notify any person, including, without limitation, tenants, employees of tenants, and contractors, intending to conduct invasive work or excavate within the Restricted Areas, of the nature and location of contamination in the Restricted Areas, and, of the precautions necessary to minimize potential human exposure to contaminants.

ii. Except as provided in Paragraph 7B, below, no person shall make, or allow to be made, any alteration, improvement, or disturbance in, to, or about the Roadways which disturbs any engineering control at the Roadways without first obtaining a soil remedial action permit modification pursuant to N.J.A.C. 7:26C-7. Nothing herein shall constitute a waiver of the obligation of any person to comply with all applicable laws and regulations including, without limitation, the applicable rules of the Occupational Safety and Health Administration.

iii. Notwithstanding subparagraph 7Aii., above, a soil remedial action permit modification is not required for any alteration, improvement, or disturbance provided that the owner, lessee or operator:

(A) Notifies the Department of Environmental Protection of the activity by calling the DEP Hotline, at 1-877-WARN-DEP or 1-877-927-6337, within twenty-four (24) hours after the beginning of each alteration, improvement, or disturbance;

(B) Restores any disturbance of an engineering control to pre-disturbance conditions within sixty (60) calendar days after the initiation of the alteration, improvement or disturbance;

(C) Ensures that all applicable worker health and safety laws and regulations are followed during the alteration, improvement, or disturbance, and during the restoration;

(D) Ensures that human exposure to contamination in excess of the remediation standards does not occur; and

(E) Describes, in the next biennial certification the nature of the alteration, improvement, or disturbance, the dates and duration of the alteration, improvement, or disturbance, the name of key individuals and their affiliations conducting the alteration, improvement, or disturbance, a description of the notice the Owner gave to those persons prior to the disturbance.

7B. EMERGENCIES. In the event of an emergency which presents, or may present, an unacceptable risk to the public health and safety, or to the environment, or immediate environmental concern, see N.J.S.A. 58:10C-2, any person may temporarily breach an engineering control provided that that person complies with each of the following:

i. Immediately notifies the Department of Environmental Protection of the emergency, by calling the DEP Hotline at 1-877-WARNDEP or 1-877-927-6337;

ii. Hires a Licensed Site Remediation Professional (unless the Restricted Areas includes an unregulated heating oil tank) to respond to the emergency;

iii. Limits both the actual disturbance and the time needed for the disturbance to the minimum reasonably necessary to adequately respond to the emergency;

iv. Implements all measures necessary to limit actual or potential, present or future risk of exposure to humans or the environment to the contamination;

v. Notifies the Department of Environmental Protection when the emergency or immediate environmental concern has ended by calling the DEP Hotline at 1-877-WARNDEP or 1-877-927-6337; and

vi. Restores the engineering control to the pre-emergency conditions as soon as possible, and provides notification to the Department of Environmental Protection within sixty (60) calendar days after completion of the restoration of the engineering control, including: (a) the nature and likely cause of the emergency; (b) the potential discharges of or exposures to contaminants, if any, that may have occurred; (c) the measures that have been taken to mitigate the effects of the emergency on human health and the environment; (d) the measures completed or implemented to restore the engineering control; and (e) the changes to the engineering control or Roadway

operation and maintenance plan to prevent reoccurrence of such conditions in the future.

8. TERMINATION OF NOTICE IN LIEU OF A DEED NOTICE.

i. This Notice in Lieu of a Deed Notice may be terminated only upon submission of a Termination of a Notice in Lieu of a Deed Notice, available at N.J.A.C. 7:26C Appendix C, to the Department of Environmental Protection and copying the affected parties associated with the Roadways, expressly terminating this Notice in Lieu of a Deed Notice.

ii. Within thirty (30) calendar days after the submission of a Termination of Notice in Lieu of a Deed Notice, the Person Responsible for Conducting the Remediation shall apply to the Department for termination of the soil remedial action permit pursuant to N.J.A.C. 7:26C-7.

9. ACCESS. The Owner, and the subsequent owners, lessees and operators agree to allow the Department, its agents and representatives access to the Roadways to inspect and evaluate the continued protectiveness of the remedial action that includes this Notice in Lieu of a Deed Notice and to conduct additional remediation to ensure the protection of the public health and safety and of the environment if the subsequent owners, lessees and operators, during their ownership, tenancy, or operation, and the Person Responsible for Conducting the Remediation fail to conduct such remediation pursuant to this Notice in Lieu of a Deed Notice as required by law. The Owner, and the subsequent owners and lessees, shall also cause all leases, subleases, grants, and other written transfers of an interest in the Restricted Areas to contain a provision expressly requiring that all holders thereof provide such access to the Department.

10. ENFORCEMENT OF VIOLATIONS.

i. This Notice in Lieu of a Deed Notice itself is not intended to create any interest in real estate in favor of the Department of Environmental Protection, nor to create a lien against the Roadway, but merely is intended to provide notice of certain conditions and restrictions on the Roadways and to reflect the regulatory and statutory obligations imposed as a conditional remedial action for this site.

ii. The restrictions provided herein may be enforceable solely by the Department against any person who violates this Notice in Lieu of a Deed Notice. To enforce violations of this Notice in Lieu of a Deed Notice, the Department may initiate one or more enforcement actions pursuant to N.J.S.A. 58:10-23.11, and N.J.S.A. 58:10C, and require additional remediation and assess damages pursuant to N.J.S.A. 58:10-23.11, and N.J.S.A. 58:10C.

11. SEVERABILITY. If any court of competent jurisdiction determines that any provision of this Notice in Lieu of a Deed Notice requires modification, such provision shall be deemed to have been modified automatically to conform to such requirements. If

a court of competent jurisdiction determines that any provision of this Notice in Lieu of a Deed Notice is invalid or unenforceable and the provision is of such a nature that it cannot be modified, the provision shall be deemed deleted from this instrument as though the provision had never been included herein. In either case, the remaining provisions of this Notice in Lieu of a Deed Notice shall remain in full force and effect.

12A. EXHIBIT A. Exhibit A includes the following maps of the Roadways and the vicinity:

i. Exhibit A-1: Vicinity Map - A map that identifies by name the roads, and other important geographical features in the vicinity of the Roadways (for example, USGS Quad map, Hagstrom County Maps);

ii. Exhibit A-2: Metes and Bounds Description - A tax map of lots and blocks and Roadway right-of-ways as well as metes and bounds description of the restricted area within the Roadways, including reference to tax lot and block numbers for the adjacent properties to the Roadway and distances from nearby intersections;

iii. Exhibit A-3: Roadways Map - A scaled map of the Roadways, scaled at one inch to 200 feet or less, and if more than one map is submitted, the maps shall be presented as overlays, keyed to a base map; and the Roadways Map shall include diagrams of major surface topographical features such as buildings, roads, and parking lots.

12B. EXHIBIT B. Exhibit B includes the following descriptions of the Restricted Areas:

i. Exhibit B-1: Restricted Area Map - A separate map for each restricted area that includes:

(A) As-built diagrams of each engineering control, including caps, fences, slurry walls, (and, if any) ground water monitoring wells, extent of the ground water classification exception area, pumping and treatment systems that may be required as part of a ground water engineering control in addition to the Notice in Lieu of a Deed Notice

(B) As-built diagrams of any buildings, roads, parking lots and other structures that function as engineering controls; and

(C) Designation of all soil and sediment sample locations within the restricted areas that exceed any soil or sediment standard that are keyed into one of the tables described in the following paragraph.

ii. Exhibit B-2: Restricted Area Data Table - A separate table for each restricted area that includes either (A) or (B) through (F):

(A) Only for historic fill extending over the entire site or a portion of the site and for which analytical data are limited or do not exist, a narrative that states that historic fill is present at the site, a description of the fill material (e.g., ash, cinders, brick, dredge material), and a statement that such material may include, but is not limited to, contaminants such as PAHs and metals;

(B) Sample location designation from Restricted Area map (Exhibit B-1);

(C) Sample elevation based upon mean sea level;

(D) Name and chemical abstract service registry number of each contaminant with a concentration that exceeds the unrestricted use standard;

(E) The restricted and unrestricted use standards for each contaminant in the table; and

(F) The remaining concentration of each contaminant at each sample location at each elevation.

12C. EXHIBIT C. Exhibit C includes narrative descriptions of the institutional controls and engineering controls as follows:

i. Exhibit C-1: Notice in Lieu of a Deed Notice as Institutional Control: Exhibit C-1 includes a narrative description of the restriction and obligations of this Notice in Lieu of a Deed Notice that are in addition to those described above, as follows:

(A) Description and estimated size of the Restricted Areas as described above;

(B) Description of the restrictions on the Roadways by operation of this Notice in Lieu of a Deed Notice; and

(C) The objective of the restrictions.

ii. Exhibit C-2: Asphalt Pavement Cap: Exhibit C-2 includes a narrative description of the Asphalt Pavement Cap as follows:

(A) Description of the engineering control;

(B) The objective of the engineering control; and

(C) How the engineering control is intended to function.

EXHIBIT A

A-1 Vicinity Map
A-2 Metes and Bounds Description and Tax Map
A-3 Roadway Map

Water Street (between Fisk Street and Culver Avenue)
Fisk Street (between Water Street and Route 440)
Carbon Place (at the intersection with Route 440)
Danforth Avenue (at the intersection with Route 440)
Jersey City, New Jersey

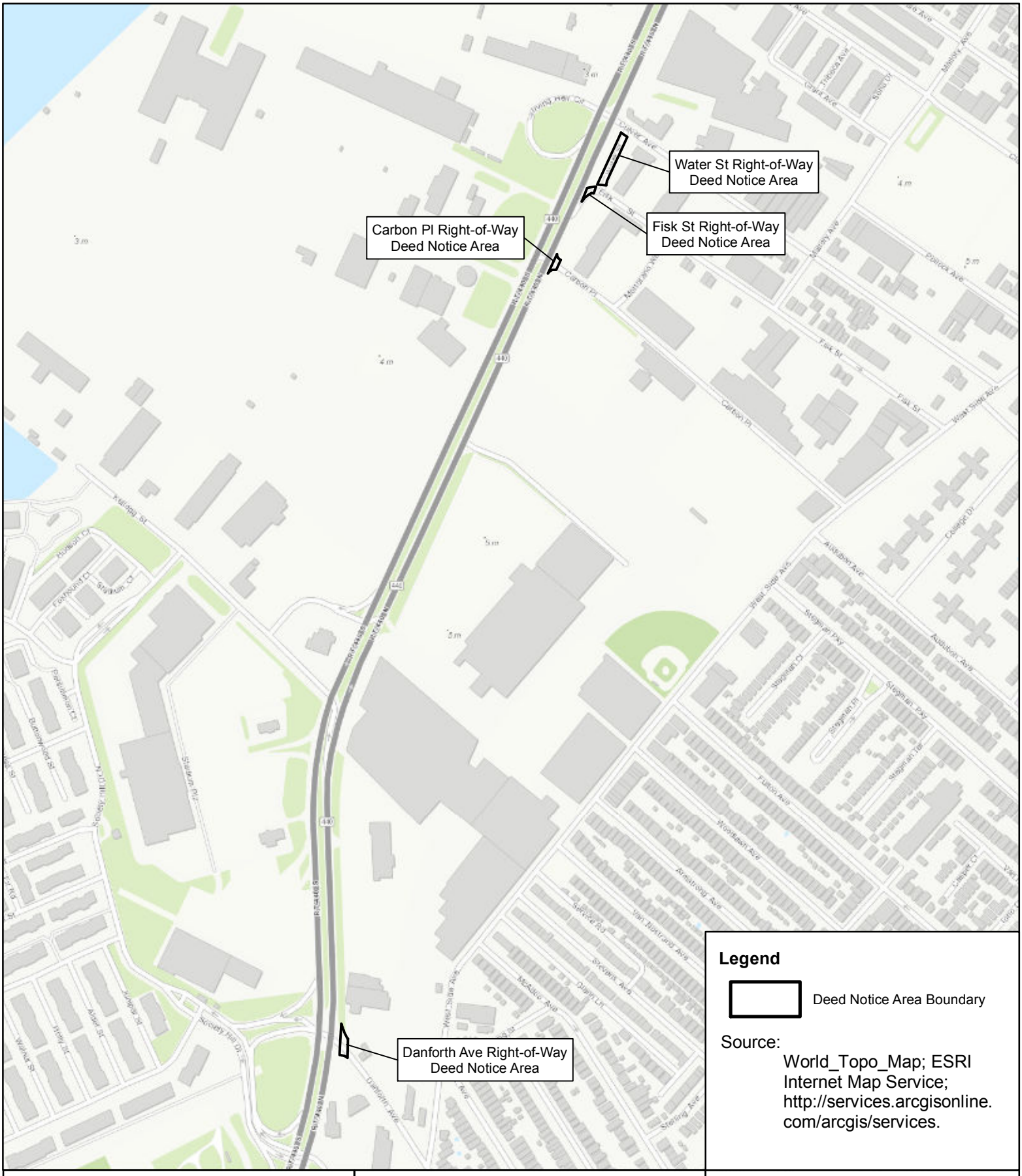
Exhibit A-1 consists of a road map for the vicinity of the Roadways

Exhibit A-2 (A-2A and A-2B) consists of metes and bounds descriptions for the Roadways and a Tax Map showing the Roadway right-of-ways and adjacent Block and Lot numbers

Exhibit A-3 consists of a figure indicating major surface features and existing features for the Roadway.

Exhibit A-1
Vicinity Map

Water Street (between Fisk Street and Culver Avenue)
Fisk Street (between Water Street and Route 440)
Carbon Place (at the intersection with Route 440)
Danforth Avenue (at the intersection with Route 440)
Jersey City, New Jersey



500 0 500

Scale In Feet

amec

ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

DRAFT

Exhibit A-1: Vicinity Map

Jersey City Right-of-Way
Jersey City, New Jersey

PROJ. NO.	3480130371	11/11/2014	REV.
Created By	WSL	Checked By	JJH

Exhibit A-2A
Metes and Bounds Description of Roadway

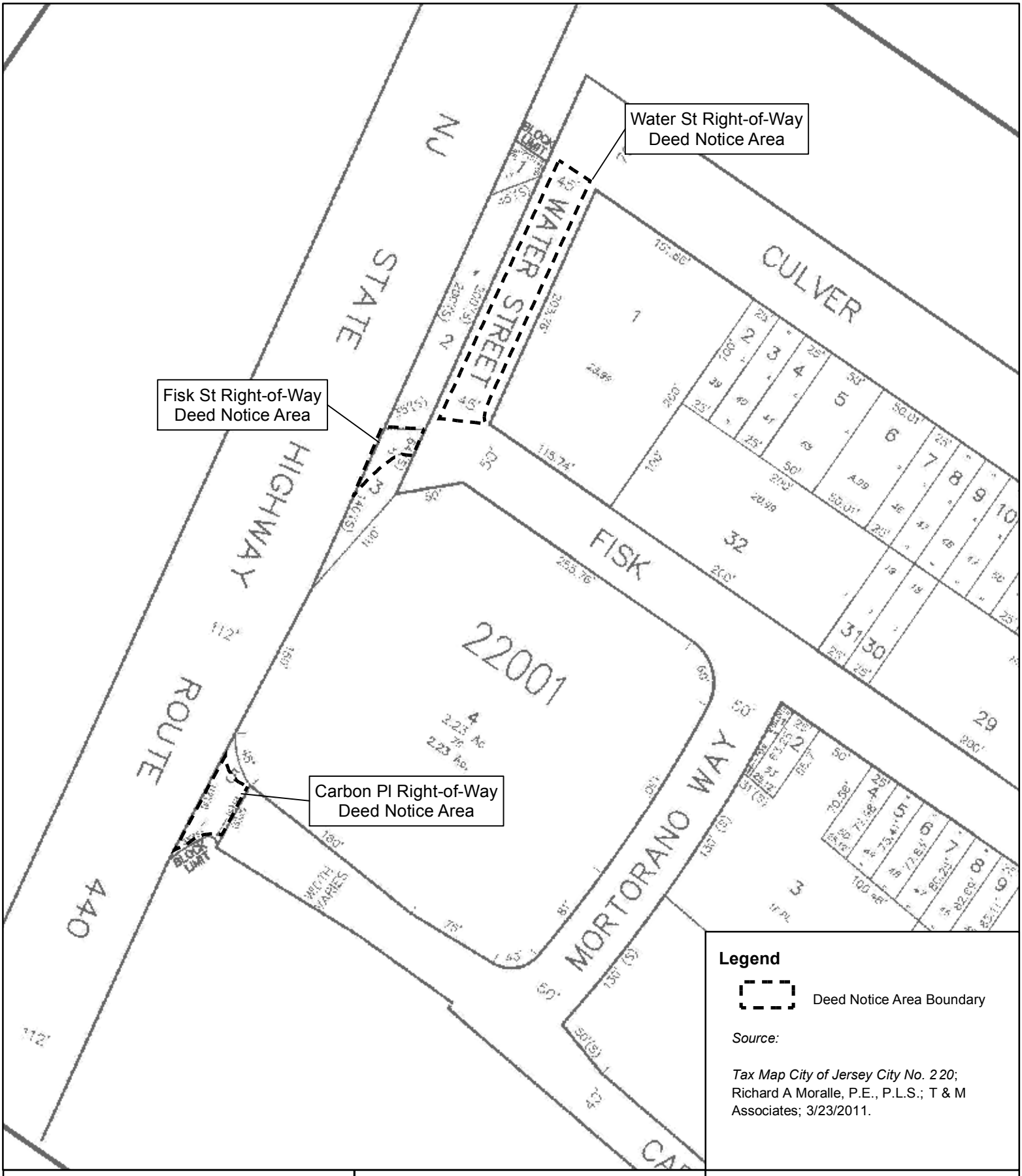
Water Street (between Fisk Street and Culver Avenue)
Fisk Street (between Water Street and Route 440)
Carbon Place (at the intersection with Route 440)
Danforth Avenue (at the intersection with Route 440)
Jersey City, New Jersey

Metes and Bounds Description

[Metes and bounds description to be included in the final notice in lieu of deed notice]

Exhibit A-2B
Tax Map

Water Street (between Fisk Street and Culver Avenue)
Fisk Street (between Water Street and Route 440)
Carbon Place (at the intersection with Route 440)
Danforth Avenue (at the intersection with Route 440)
Jersey City, New Jersey



Legend

Deed Notice Area Boundary

Source:

Tax Map City of Jersey City No. 220; Richard A Moralle, P.E., P.L.S.; T & M Associates; 3/23/2011.

500 0 500

Scale In Feet

amec

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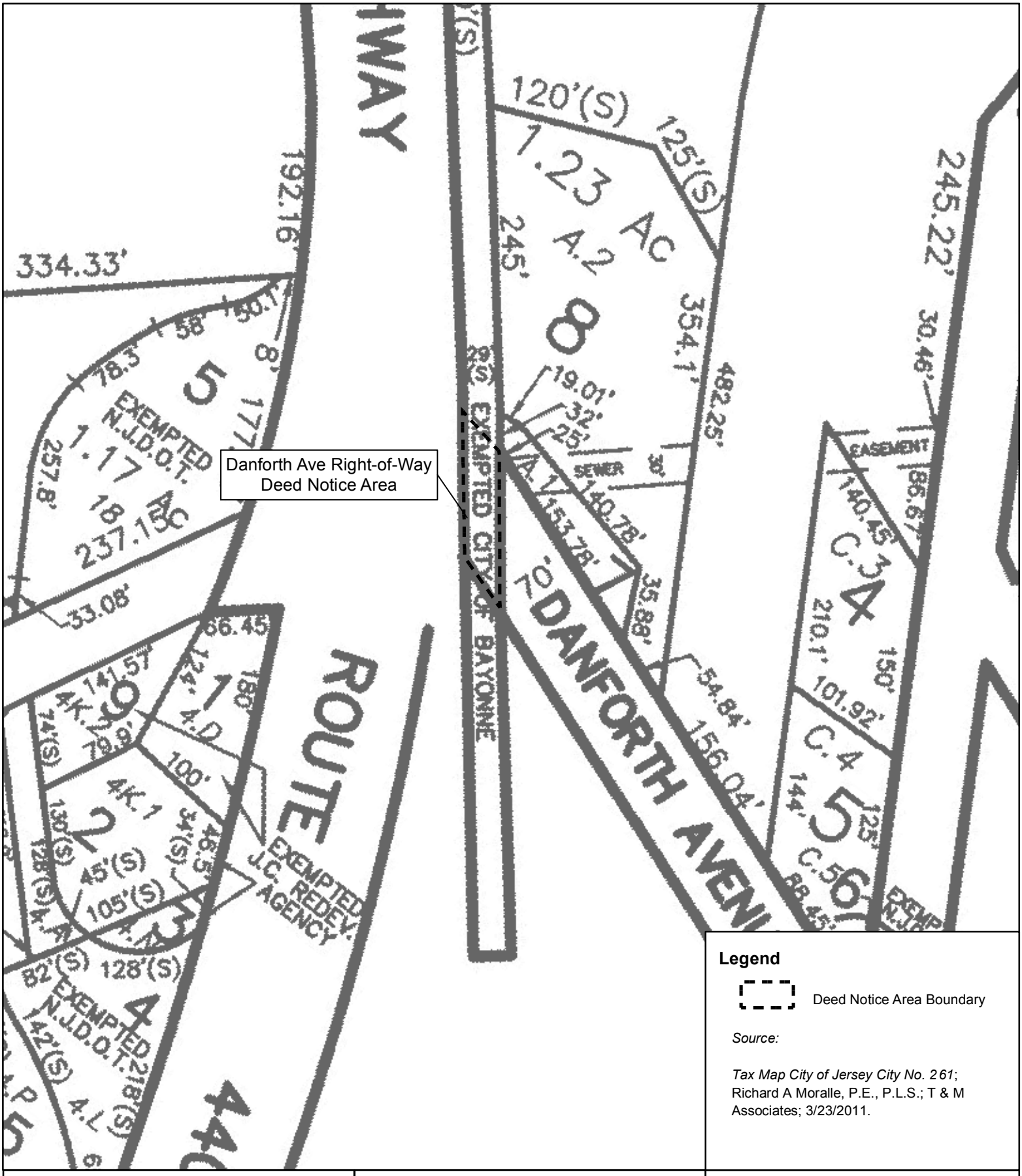
Exhibit A-2B: Tax Map

Jersey City Right-of-Way
Jersey City, New Jersey

PROJ. NO.	3480130371	11/11/2014	REV.
Created By	WSL	Checked By	JJH



Legend

Deed Notice Area Boundary

Source:

Tax Map City of Jersey City No. 261; Richard A Moralle, P.E., P.L.S.; T & M Associates; 3/23/2011.

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HAMILTON, NEW JERSEY 08619

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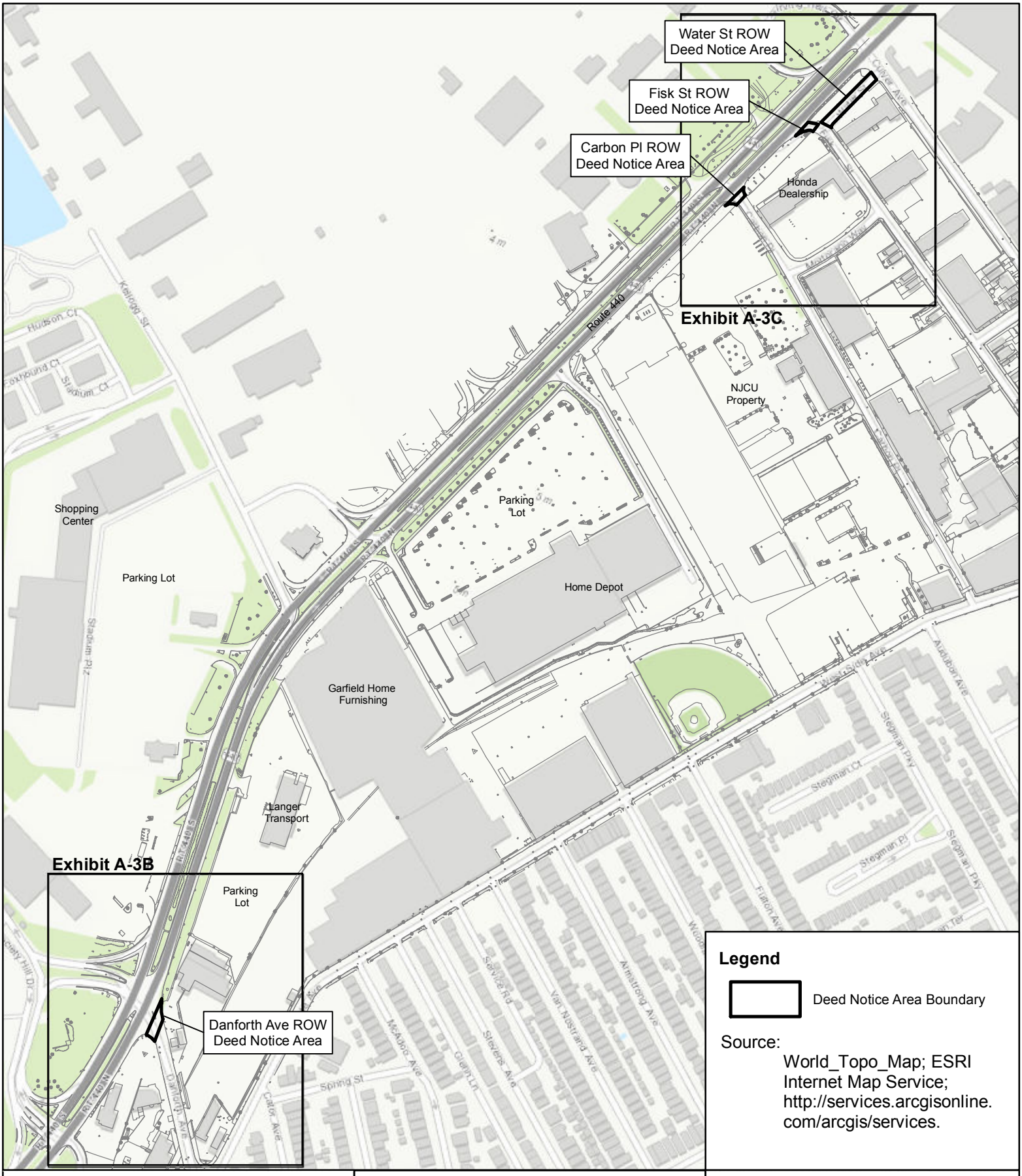
Exhibit A-2C: Tax Map

Jersey City Right-of-Way
Jersey City, New Jersey

PROJ. NO.	3480130371	11/11/2014	REV.
Created By	WSL	Checked By	JJH

Exhibit A-3
Roadway Map

Water Street (between Fisk Street and Culver Avenue)
Fisk Street (between Water Street and Route 440)
Carbon Place (at the intersection with Route 440)
Danforth Avenue (at the intersection with Route 440)
Jersey City, New Jersey



400 0 400

Scale In Feet

amec

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200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

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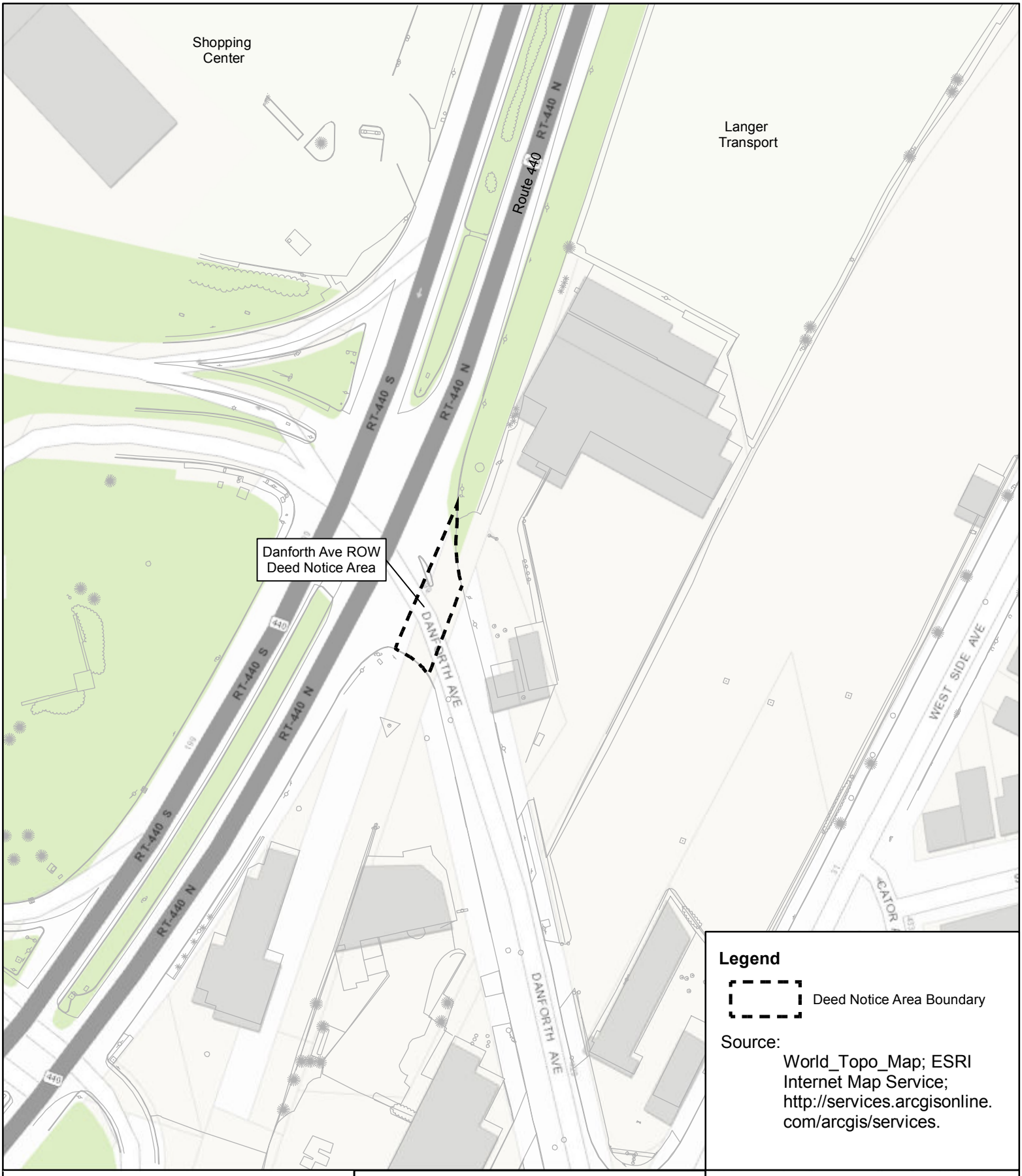
Exhibit A-3A: Roadway Map

Jersey City Right-of-Way (Key Map)
Jersey City, New Jersey

PROJ. NO.	3480130371	11/11/2014	REV.
Created By	WSL	Checked By	JJH



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Scale In Feet

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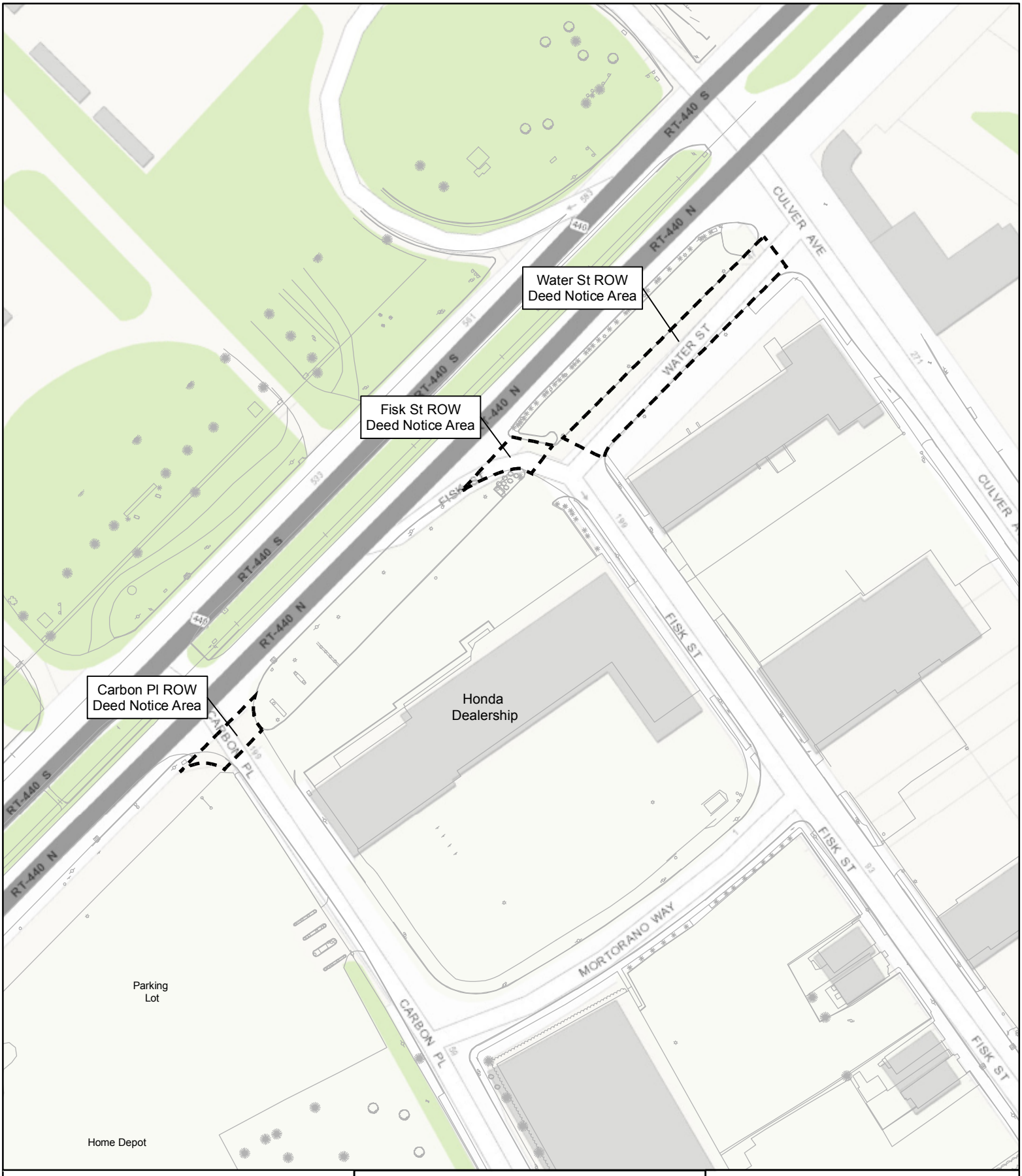
Exhibit A-3B: Roadway Map

Jersey City Right-of-Way
Jersey City, New Jersey

PROJ. NO.	3480130371	11/11/2014	REV.
Created By	WSL	Checked By	JJH



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Scale In Feet

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DRAFT

Exhibit A-3C: Roadway Map

Jersey City Right-of-Way
Jersey City, New Jersey

PROJ. NO.	3480130371	11/11/2014	REV.
Created By	WSL	Checked By	JJH

EXHIBIT B

B-1: Restricted Area Map and Engineering Controls
B-2: Restricted Area Data Table

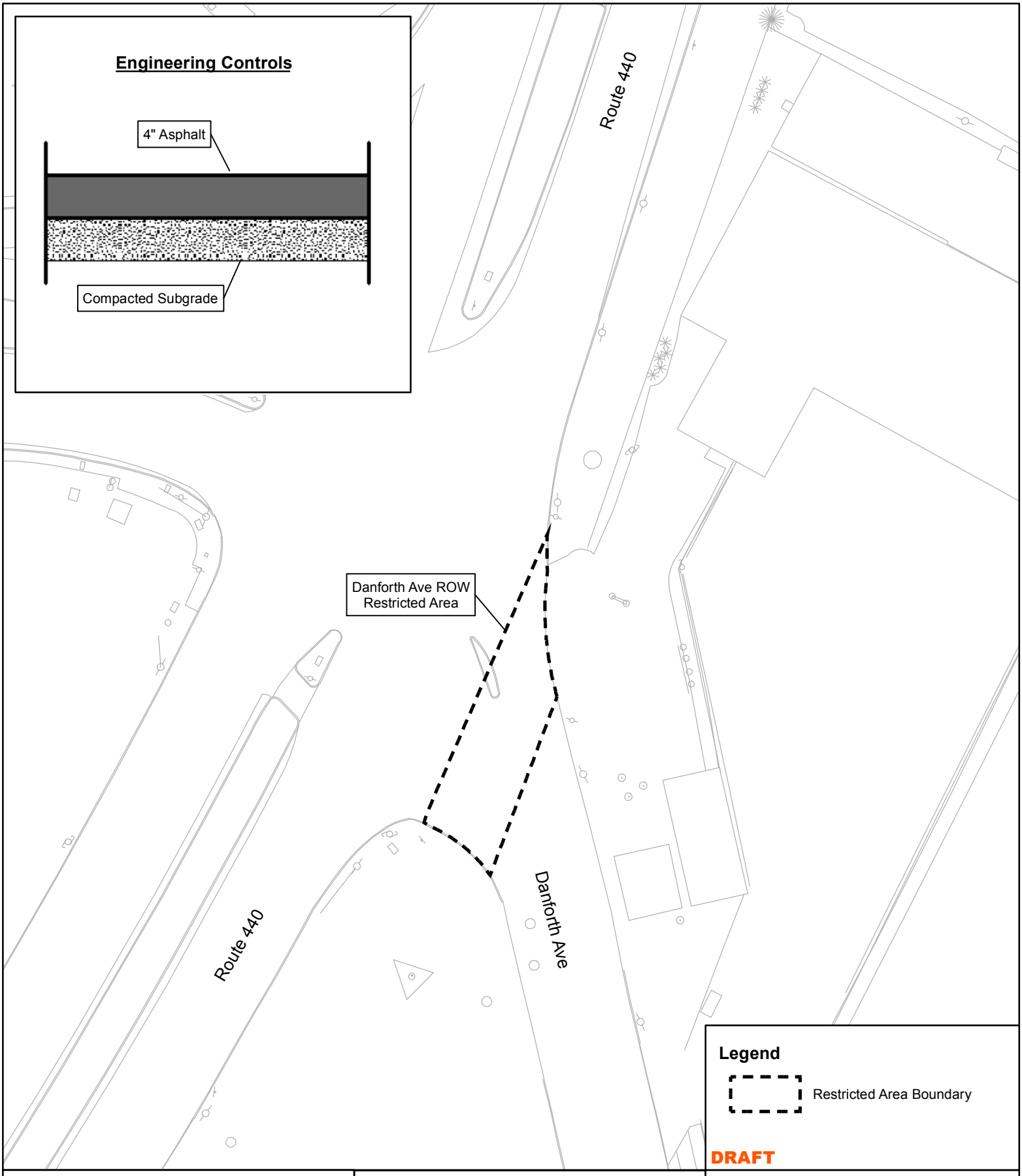
Water Street (between Fisk Street and Culver Avenue)
Fisk Street (between Water Street and Route 440)
Carbon Place (at the intersection with Route 440)
Danforth Avenue (at the intersection with Route 440)
Jersey City, New Jersey

Exhibit B-1 includes a map that illustrates the Restricted Areas and engineering/institutional controls and soil sample locations.

Exhibit B-2 includes data table which identifies the contaminant names, chemical abstract service registry numbers, the NJDEP unrestricted use soil remediation standards or criteria.

Exhibit B-1
Restricted Area Map and Engineering Control Detail

Water Street (between Fisk Street and Culver Avenue)
Fisk Street (between Water Street and Route 440)
Carbon Place (at the intersection with Route 440)
Danforth Avenue (at the intersection with Route 440)
Jersey City, New Jersey



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Scale In Feet

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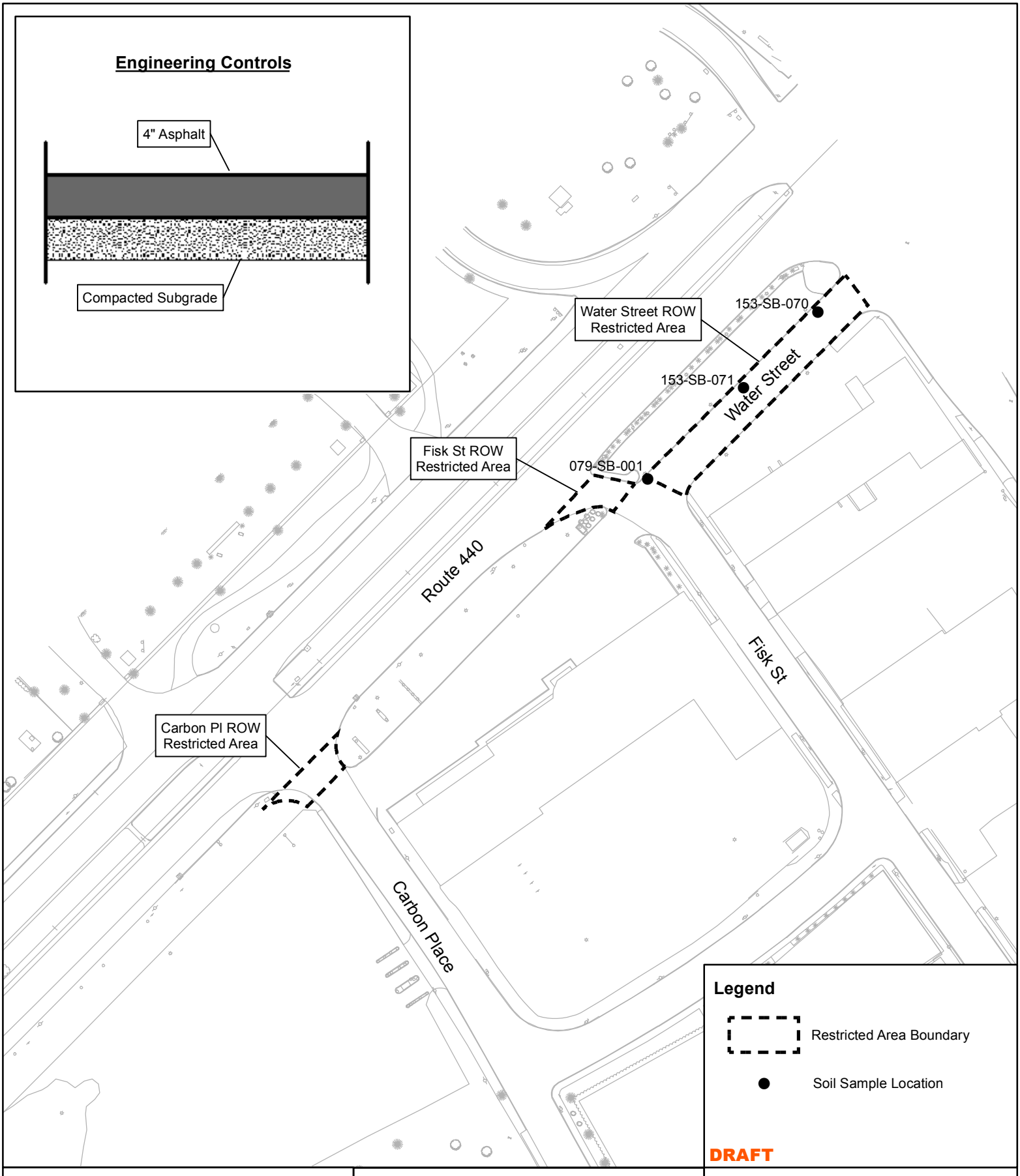
B-1A: Restricted Area Map and Engineering Controls Map

Jersey City Right-of-Way
Jersey City, New Jersey

PROJ. NO.	3480130371	11/11/2014	REV.
Created By	WSL	Checked By	JJH



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Scale In Feet

amec

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200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

B-1B: Restricted Area Map & Engineering Controls Detail

Jersey City Right-of-Way
Jersey City, New Jersey

PROJ. NO.	3480130371	11/11/2014	REV.
Created By	WSL	Checked By	JJH

Exhibit B-2
Restricted Area Data Table

Water Street (between Fisk Street and Culver Avenue)
Fisk Street (between Water Street and Route 440)
Carbon Place (at the intersection with Route 440)
Danforth Avenue (at the intersection with Route 440)
Jersey City, New Jersey

B-2 Restricted Area Data Table

Water Street Right-of-Way
Jersey City, New Jersey

Location	Sample Elevation (Feet above msl)	Sample Depth (feet)	CASR#	Parameter	Sample Date	Result (mg/kg)	Q	NJDEP Soil Criteria (mg/kg)	NJDEP NRDCSRS (mg/kg	NJDEP RDCSRS (mg/kg)
079-SB-001	6.97	4-6	18540-29-9	Hexavalent Chromium	08/16/2005	166	J	20	NA	NA
079-SB-001 DP	6.97	4-6	18540-29-9	Hexavalent Chromium	08/16/2005	169	J	20	NA	NA
079-SB-001	4.97	6-7.5	18540-29-9	Hexavalent Chromium	08/16/2005	362	J	20	NA	NA
153-SB-070	6.97	4.5-5	18540-29-9	Hexavalent Chromium	05/20/2011	360		20	NA	NA
153-SB-070	4.97	6-6.5	18540-29-9	Hexavalent Chromium	05/20/2011	174		20	NA	NA
153-SB-070	1.97	9-9.5	18540-29-9	Hexavalent Chromium	05/20/2011	46.7		20	NA	NA
153-SB-071	6.47	4.5-5	18540-29-9	Hexavalent Chromium	05/20/2011	59.8		20	NA	NA
153-SB-071 DP	6.47	4.5-5	18540-29-9	Hexavalent Chromium	05/20/2011	55.5		20	NA	NA

Notes:
J: Data indicates the presence of a compound that meets the identification criteria. The concentration given is an approximate value
Q: Qualifier
CASR#: Chemical Abstract Service Registry Number
NJDEP: New Jersey Department of Environmental Protection
mg/kg: milligrams per kilogram
Elevations are in feet above mean sea level using N.A.V.D. 1927
N.A.V.D.: North American Vertical Datum
msl: mean sea level
NRDCSRS: Non-Residential Direct Contact Soil Remediation Standard
RDCSRS: Residential Direct Contact Soil Remediation Standard

Prepared By: CMR 12/9/2011
Checked By: JJH 12/19/2014

EXHIBIT C

C-1: Institutional Controls
C-2: Engineering Controls

Water Street (between Fisk Street and Culver Avenue)
Fisk Street (between Water Street and Route 440)
Carbon Place (at the intersection with Route 440)
Danforth Avenue (at the intersection with Route 440)
Jersey City, New Jersey

Exhibit C-1 includes a description of the Notice in Lieu of a Deed Notice as institutional control including monitoring and reporting requirements.

Exhibit C-2 includes a description of engineering controls, operations and maintenance, monitoring and reporting requirements.

Exhibit C-1
Notice in Lieu of a Deed Notice as Institutional Control

Water Street (between Fisk Street and Culver Avenue)
Fisk Street (between Water Street and Route 440)
Carbon Place (at the intersection with Route 440)
Danforth Avenue (at the intersection with Route 440)
Jersey City, New Jersey

(A) General Description:

(1) The portion of each Roadways shown on Exhibit B-1 are Restricted Areas. The estimated size of the Restricted Areas is approximately 11,900 square feet or approximately 0.27 acres.

(2) Proper precautions must be taken (i.e., excavation or digging) that may penetrate the bottom of the engineering controls in the Restricted Areas. See subsections 7A and 7B of the Deed Notice for directions on Alterations, Improvements, Disturbances, and Emergencies.

(3) The restrictions will prevent contact with soils above the NJDEP Soil Remediation Standards.

(B) Description of monitoring:

(1) Annual visual inspections of the Restricted Areas will be conducted to document that the engineering controls are in good condition and to determine whether any disturbances of the soil in the Restricted Areas may have resulted in unacceptable exposure to the soil contamination;

(2) Annual visual inspections of the Restricted Areas will be conducted to determine whether there have been any land use changes subsequent to the submission of this Notice in Lieu of a Deed Notice to the NJDEP and affected parties or the most recent biennial certification, whichever is more recent;

(3) Annual visual inspections of the Restricted Areas will be conducted to determine whether the current land use on the Roadways is consistent with the restrictions in this Notice in Lieu of a Deed Notice;

(4) A review will be conducted to determine if any newly promulgated or modified requirements of applicable regulations or laws apply to the Roadways; and

(5) A review will be conducted to determine if any new standards, regulations, or laws apply to the site that might necessitate additional sampling in order to evaluate the protectiveness of the remedial action which includes this Notice in Lieu of a Deed Notice. If necessary, this additional sampling will be performed.

(C) Biennial certification items:

A Remedial Action Protectiveness / Biennial Certification Form - Soil will be submitted to the NJDEP on a biennial basis. The Remedial Action Protectiveness / Biennial Certification Form - Soil will include the following:

(1) A determination that all conditions set forth in Notice in Lieu of a Deed Notice subparagraph 12C have been adhered to, including evaluation of any available documents created as a result of changes in land use or incidents.

(2) A determination whether or not the land use at the Roadways has remained consistent with the restrictions in the Notice in Lieu of a Deed Notice.

(3) A determination whether or not the Notice in Lieu of a Deed Notice continues to be protective of the public health and safety and of the environment.

Exhibit C-2
Engineering Controls:
Asphalt Pavement Cap

Water Street (between Fisk Street and Culver Avenue)
Fisk Street (between Water Street and Route 440)
Carbon Place (at the intersection with Route 440)
Danforth Avenue (at the intersection with Route 440)
Jersey City, New Jersey

(A) General Description:

(1) Engineering controls for this portion of the Roadways consist of four inches of existing asphalt;

(2) The objective of the engineering controls is to prevent direct contact with soils containing contaminant concentrations above the NJDEP SRS.

(3) The engineering control is intended to function as a barrier to underlying soils.

(B) Description of the operation and maintenance:

Visual inspections of the Roadway will be performed annually to document that:

(1) The engineering control is in good condition and to document the integrity, operability, and effectiveness of the engineering control;

(2) The engineering control continues to function as designed and intended in order to protect the public health and safety and the environment;

(3) Each alteration, excavation or disturbance of any engineering control is timely and appropriately addressed to maintain the integrity of the engineering control (also, see subsections 7A and 7B of this Notice in Lieu of a Deed Notice for directions on Alterations, Improvements, Disturbances, and Emergencies);

(4) The integrity of each institutional control is maintained so that the remedial action continues to be protective of the public health and safety and of the environment;

(5) Records of the inspections are maintained as listed in the applicable Remedial Action Permit. Should the visual inspection indicate that other activities are necessary, those activities will be listed and executed; and

(6) A review of any new standards, regulations, or laws will be conducted to evaluate the protectiveness of the remedial action, which includes this Notice in Lieu of a Deed Notice. Should the review indicate that other activities are

necessary, those activities will be listed and executed and documented in the next Remedial Action Protectiveness / Biennial Certification Form as applicable in the Remedial Action Permit.

(C) Biennial certification items:

A Remedial Action Protectiveness / Biennial Certification Form - Soil along with the required information that accompanies the form will be submitted to the NJDEP on a biennial basis. Components of the Remedial Action Protectiveness / Biennial Certification Form - Soil include, but are not limited to the following:

(1) An evaluation of any statutory or regulatory changes that are relevant to the Notice in Lieu of a Deed Notice since the last submittal of the Remedial Action Protectiveness / Biennial Certification Form - Soil, including all relevant modifications to the remediation standards and guidance related to soil.

(2) A determination if the Roadway use has changed and if so, whether a new notice needs to be filed.

(3) A determination if the zoning of the Roadway changed.

(4) An evaluation to determine whether the engineering control continues to operate as designed and is meeting its original objectives and intended functions.

(5) An evaluation to determine whether the engineering control continues to be protective of the public health and safety and of the environment.

(6) A description of the results of inspections performed.

(7) A determination if any disturbances to the engineering controls have occurred, how they were restored, if the disturbances render the remedial action no longer protective of public health, safety and of the environment, and a description of all activities performed as part of the disturbance in accordance with subparagraphs 7A and 7B of the Notice in Lieu of a Deed Notice.

(8) A description of any remedial actions performed.

APPENDIX L

COMPLIANCE AVERAGING DOCUMENTATION
PORTION OF NJDOT ROW

COMPLIANCE AVERAGING SUMMARY
Site 153 Former Morris Canal
Portion of Route 440 Right-of-Way between Fisk Street and Culver Avenue
Adjacent to 440 Fisk Realty Property (Block 22004, Lot 1)
Jersey City, New Jersey

This document was prepared by Amec on behalf of Honeywell and presents a summary of compliance averaging for evaluation of attainment with the NJDEP soil policy guideline of 20 mg/kg for hexavalent chromium in shallow soils (0-2' depth) based on non-residential land use. Compliance averaging for shallow soils was evaluated to allow for use of shallow soils in conjunction with existing surface features as engineering control (cap) within a narrow strip of land or "island" that is used for vehicle parking by a car dealership.

The subject property is approximately 200 feet long by 35 feet wide (7,500 square feet), located between Route 440 and Water Street, north of Site 153 Former Morris Canal and Site 079 Route 440 Vehicle Corp. (where remedial actions have been completed). The majority of the property is covered with asphalt pavement and consists of Block 22004, Lot 1, owned by 440 Fisk Realty, LLC. There is a narrow landscaped area along the western perimeter (which is part of the Route 440 ROW) and a small area of stone pavers at the north and south ends of the island (some of which is part of City of Jersey City ROW. The entire area is located within the Route 440 setback area as specified by City of Jersey City Ordinance pertaining to setback zones for redevelopment proximate to Route 440. Future road improvements are planned by the NJDOT to expand Route 440 into a multilane boulevard in the area of the property. The location of the property relative to other sites is shown in Illustration #1, and photographs are attached showing existing conditions.

Soil sampling for hexavalent chromium was performed as part of the RI for Site 153 Morris Canal Site, i.e., to provide data for delineation north of Site 153. A summary of soil sampling results follows:

- Nine soil borings were completed within the island area to depths up to 14 feet, with soil samples collected at various depths and analyzed for total and hexavalent chromium (see attached figure showing soil sample results).
- Field observations indicate fill material (e.g., coal, ash, brick, glass) at depths up to about 8 to 10 feet, with native soils (e.g., clay/silt, sands) below 10 feet. Peat was encountered in some borings at depths between 10 and 13 feet.
- COPR was not observed in soil borings. Hexavalent chromium concentrations ranged from non-detect (ND) to 163 mg/kg, with the highest concentrations detected at depths between 6 and 10 feet. Hexavalent chromium detections in shallow soils (0-2' zone) ranged from non-detect to 55.6 mg/kg.

- Delineation to the north is completed based on results of the northernmost boring (153-SB-069) indicating no exceedances of 20 mg/kg. Delineation to the south is not required due to adjacent Site 079 and Site 153 located farther south of this property. Delineation to the east is completed based on soil borings within the Water Street ROW.
- Delineation to the west (within Route 440 ROW) is not fully completed; however, delineation farther to the west is achieved based on data for SA-6 located on the west side of Route 440. If needed, additional delineation within the Route 440 ROW may be coordinated with the RI for Site 187 Route 440 Median Strip or as part of work associated with future Route 440 road improvements.

The NJDEP Technical Guidance for the Attainment of Remediation Standards and Site-Specific Criteria provides four compliance averaging options: (1) arithmetic mean, (2) 95 percent Upper Confidence Limit (95 percent UCL) of the mean, (3) Spatially Weighted Average, and (4)75 percent/10X procedure. For the subject property, compliance averaging was performed using the arithmetic mean calculation based on the number of sample points (less than 10 samples). A summary of compliance averaging results and relevant technical rationale follows.

Compliance averaging was performed for evaluation of attainment of the NJDEP soil criteria of 20 mg/kg for hexavalent chromium within the 0.5 to 2' depth zone, based on non-residential land use. Samples were not collected within the 0 to 0.5' depth zone since this interval consists of existing asphalt pavement and gravel sub-base over the majority of the property. The narrow landscaped area contains mulch and topsoil within 0 to 1' depth zone. Hexavalent chromium was detected above 20 mg/kg at four sample locations from 0.5 to 2.0 feet bgs: 153-SB-060 (20.1 mg/kg), 153-SB-063 (32.2 mg/kg), 153-SB-075 (29.6 mg/kg) and 153-SB-076 (55.6 mg/kg). Compliance averaging included the use of samples from within the island area associated with the 440 Fisk Realty property and adjacent street ROW areas, i.e., Route 440 (narrow landscaped area) and portion of Water Street between Fisk Street and Culver Avenue (small paver areas). This approach for non-residential compliance averaging is appropriate from a functional land use perspective based on current use as a parking lot and expected future use of the property and adjacent street ROW areas, i.e., located within the designated Route 440 setback zone which is on the order of 60 feet on either side of Route 440 and extends to the east side of Water Street.

The compliance averaging evaluation included nine soil sample locations (0.5 to 2' depth zone) within the designated non-residential land use functional area. Calculation of the arithmetic mean indicates an average concentration of 19.3 mg/kg for hexavalent chromium. Compliance averaging results for hexavalent chromium indicates attainment of the NJDEP soil criteria of 20 mg/kg based on non-residential land use. Soil sample locations and results are shown on **Figure 1**; sample results shaded yellow were used for compliance averaging. Compliance averaging calculation results are indicated on **Table 1**.

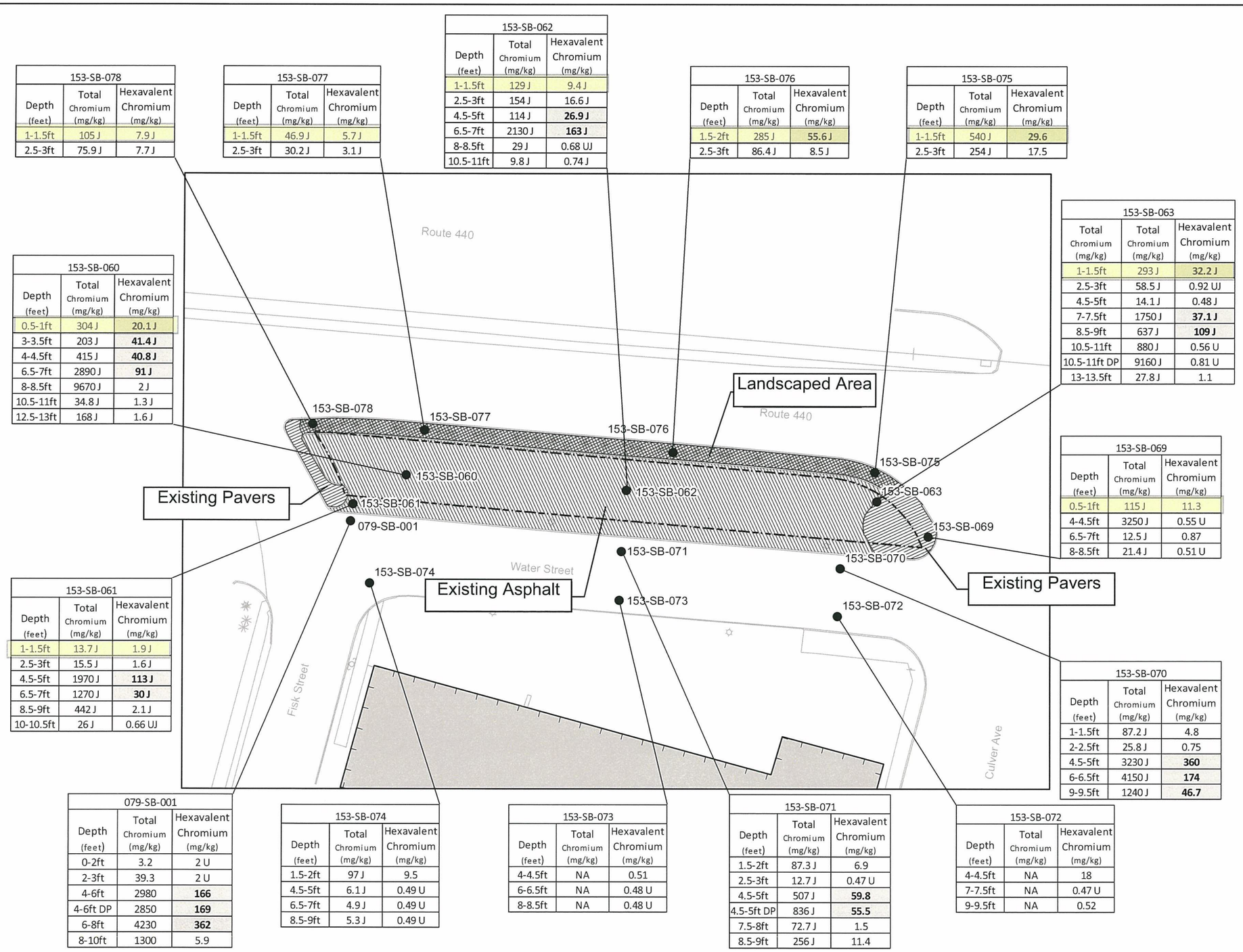
The assumptions and technical rationale used in the calculations are listed below with the NJDEP Attainment Guidance (*reference section shown in italics/parentheses*):

- Horizontal and vertical delineation of hexavalent chromium was completed using single point compliance. Delineation to the west (within Route 440) is not fully completed along the perimeter of the subject property; however, delineation farther to the west is achieved based on data for SA-6 North located on the west side of Route 440. Based on existing conditions and land use, use of existing data is appropriate for compliance averaging for the subject property.
- The functional area to determine what samples to include in the compliance averaging process should account for land use to determine whether to use a residential or non-residential functional area (*Section A2.1*). Use of the selected non-residential functional area for the property is based on land use as vehicle storage lot for car dealership. The property is also within the Route 440 setback area, thus land use is expected to remain as non-residential.
- For a non-residential exposure scenario, the functional area size is limited to 2 acres (Section A2.1.1) with a preferred square shape but can vary with a maximum length no more than four times the width (*Section A2.1.2*). The size of designated functional area is approximately 200 feet by 35 feet (0.16 acres); the maximum length (200 feet) is five to six times the maximum width (35 feet). Although the length to width ratio is greater than what is specified in the guidance, compliance averaging is appropriate based on site conditions and land use.
- Functional areas for compliance averaging should include separate calculation for surface (0-2 feet below grade) and subsurface (greater than 2 feet below grade) vertical zones (*Section A2.1.3*). For the subject property, compliance averaging was performed for the surface zone (0-2 feet) only to evaluate use of soils as part of the engineering controls (cap). Subsurface soils containing hexavalent chromium concentrations above 20 mg/kg will be addressed using institutional controls (Deed Notice).
- Sampling should be biased towards the AOC and not include more than the minimum number of samples needed to complete the delineation (*Section A2.0*). Samples from borings where hexavalent chromium was detected above 20 mg/kg and in shallow soils (0-2') and surrounding borings were used.
- A minimum of 10 samples should be used for calculating the 95 UCL (*Section A2.0*) and the 95 UCL approach should use an algorithm that properly addresses non-detect results to evaluate the data (*Section A2.1.4*). The 95 UCL method was not used based on less than 10 sampling points.

Illustration #1: Site Location and Surrounding Area

Southwest side of property at corner of Route 440 and Fisk Street

Northwest side of property at corner of Route 440 and Culver Avenue



153-SB-078		
Depth (feet)	Total Chromium (mg/kg)	Hexavalent Chromium (mg/kg)
1-1.5ft	105 J	7.9 J
2.5-3ft	75.9 J	7.7 J

153-SB-077		
Depth (feet)	Total Chromium (mg/kg)	Hexavalent Chromium (mg/kg)
1-1.5ft	46.9 J	5.7 J
2.5-3ft	30.2 J	3.1 J

153-SB-062		
Depth (feet)	Total Chromium (mg/kg)	Hexavalent Chromium (mg/kg)
1-1.5ft	129 J	9.4 J
2.5-3ft	154 J	16.6 J
4.5-5ft	114 J	**26.9 J**
6.5-7ft	2130 J	**163 J**
8-8.5ft	29 J	0.68 UJ
10.5-11ft	9.8 J	0.74 J

153-SB-076		
Depth (feet)	Total Chromium (mg/kg)	Hexavalent Chromium (mg/kg)
1.5-2ft	285 J	**55.6 J**
2.5-3ft	86.4 J	8.5 J

153-SB-075		
Depth (feet)	Total Chromium (mg/kg)	Hexavalent Chromium (mg/kg)
1-1.5ft	540 J	**29.6**
2.5-3ft	254 J	17.5

153-SB-063		
Total Chromium (mg/kg)	Total Chromium (mg/kg)	Hexavalent Chromium (mg/kg)
1-1.5ft	293 J	**32.2 J**
2.5-3ft	58.5 J	0.92 UJ
4.5-5ft	14.1 J	0.48 J
7-7.5ft	1750 J	**37.1 J**
8.5-9ft	637 J	**109 J**
10.5-11ft	880 J	0.56 U
10.5-11ft DP	9160 J	0.81 U
13-13.5ft	27.8 J	1.1

153-SB-060		
Depth (feet)	Total Chromium (mg/kg)	Hexavalent Chromium (mg/kg)
0.5-1ft	304 J	**20.1 J**
3-3.5ft	203 J	**41.4 J**
4-4.5ft	415 J	**40.8 J**
6.5-7ft	2890 J	**91 J**
8-8.5ft	9670 J	2 J
10.5-11ft	34.8 J	1.3 J
12.5-13ft	168 J	1.6 J

153-SB-069		
Depth (feet)	Total Chromium (mg/kg)	Hexavalent Chromium (mg/kg)
0.5-1ft	115 J	11.3
4-4.5ft	3250 J	0.55 U
6.5-7ft	12.5 J	0.87
8-8.5ft	21.4 J	0.51 U

153-SB-061		
Depth (feet)	Total Chromium (mg/kg)	Hexavalent Chromium (mg/kg)
1-1.5ft	13.7 J	1.9 J
2.5-3ft	15.5 J	1.6 J
4.5-5ft	1970 J	**113 J**
6.5-7ft	1270 J	**30 J**
8.5-9ft	442 J	2.1 J
10-10.5ft	26 J	0.66 UJ

153-SB-070		
Depth (feet)	Total Chromium (mg/kg)	Hexavalent Chromium (mg/kg)
1-1.5ft	87.2 J	4.8
2-2.5ft	25.8 J	0.75
4.5-5ft	3230 J	**360**
6-6.5ft	4150 J	**174**
9-9.5ft	1240 J	**46.7**

079-SB-001		
Depth (feet)	Total Chromium (mg/kg)	Hexavalent Chromium (mg/kg)
0-2ft	3.2	2 U
2-3ft	39.3	2 U
4-6ft	2980	**166**
4-6ft DP	2850	**169**
6-8ft	4230	**362**
8-10ft	1300	5.9

153-SB-074		
Depth (feet)	Total Chromium (mg/kg)	Hexavalent Chromium (mg/kg)
1.5-2ft	97 J	9.5
4.5-5ft	6.1 J	0.49 U
6.5-7ft	4.9 J	0.49 U
8.5-9ft	5.3 J	0.49 U

153-SB-073		
Depth (feet)	Total Chromium (mg/kg)	Hexavalent Chromium (mg/kg)
4-4.5ft	NA	0.51
6-6.5ft	NA	0.48 U
8-8.5ft	NA	0.48 U

153-SB-071		
Depth (feet)	Total Chromium (mg/kg)	Hexavalent Chromium (mg/kg)
1.5-2ft	87.3 J	6.9
2.5-3ft	12.7 J	0.47 U
4.5-5ft	507 J	**59.8**
4.5-5ft DP	836 J	**55.5**
7.5-8ft	72.7 J	1.5
8.5-9ft	256 J	11.4

153-SB-072		
Depth (feet)	Total Chromium (mg/kg)	Hexavalent Chromium (mg/kg)
4-4.5ft	NA	18
7-7.5ft	NA	0.47 U
9-9.5ft	NA	0.52

Legend

- Soil Boring Location
- Existing Brick/Pavers
- Existing Landscaped Area
- Existing Asphalt
- Existing Building
- Property Boundary

Notes:

1. Property boundary drawn from ALTA/ACSM Land Survey by Schmidt Surveying dated 10-18-13, revised 11-14-13.
2. Sample shaded and bold exceed 20 mg/kg for Hexavalent Chromium
3. U = Compound was not detected. The Practical Quantitation Limit for Hexavalent Chromium is 2 mg/kg.
4. J = Data indicates the presence of a compound that meets the identification criteria. The concentration given is an approximate value.
5. DUP = Duplicate soil sample was collected and analyzed.
6. NA = Not Analyzed.
7. Sample results shaded in yellow used for compliance averaging (0-2')

40 0 40 80

Scale In Feet

Amec Project Number:
3480110271

Prepared/Date:
WSL 5/6/2014

Checked/Date:
TG 8/26/14

ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

Figure 1

Boring Locations and
Chromium/Hexavalent Chromium Results
440 Fisk Realty, LLC Property
Block 22004, Lot 1
Jersey City, New Jersey

Table 1
Compliance Average 0-2 feet
Soil Sample Results - Total and Hexavalent Chromium
440 Fisk Realty Property/Route 440 ROW/City ROW Island
Jersey City, New Jersey

Location ID	Field Sample ID	Date Sampled	Depth (feet)	HEXAVALENT CHROMIUM (mg/kg)	
153-SB-060	153-SB-060-0002	12/14/2010	0.5-1	**20.1**	J
153-SB-061	153-SB-061-0002	12/14/2010	1-1.5	1.9	J
153-SB-062	153-SB-062-0002	12/14/2010	1-1.5	9.4	J
153-SB-063	153-SB-063-0002	12/14/2010	1-1.5	**32.2**	J
153-SB-069	153-SB-069-0002	5/20/2011	0.5-1	11.3	
153-SB-075	153-SB-075-0002	5/20/2011	1-1.5	**29.6**	
153-SB-076	153-SB-076-0002	5/20/2011	1.5-2	**55.6**	J
153-SB-077	153-SB-077-0002	5/20/2011	1-1.5	5.7	J
153-SB-078	153-SB-078-0002	5/20/2011	1-1.5	7.9	J
			Arithmetic Mean	**19.3**	

Notes
Bolded and shaded values exceed the NJDEP Soil Criteria of 20 mg/kg for Hexavalent Chromium
J: Data indicates the presence of a compound that meets the identification criteria. The concentration given is an approximate value.
mg/kg: milligrams per kilogram

Prepared By: MLS
Checked By:US/NW