UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY

JERSEY CITY MUNICIPAL UTILITIES AUTHORITY, Plaintiff, v. HONEYWELL INTERNATIONAL INC., Defendant.	Civil Action No. 05-5955 (BRM-JAD)
JERSEY CITY INCINERATOR AUTHORITY, Plaintiff, v. HONEYWELL INTERNATIONAL INC., Defendant.	Civil Action No. 05-5993 (BRM-JAD) (Consolidated under Civ. No. 05-5955 (BRM-JAD))
HACKENSACK RIVERKEEPER, INC., *et al.,* Plaintiffs, v. HONEYWELL INTERNATIONAL INC., *et al.,* Defendants.	Civil Action No. 06-0022 (BRM-JAD) (Consolidated under Civ. No. 05-5955 (BRM-JAD)) **All Actions Consolidated Under Civ. No. 95-2097 (**BRM-JAD**)** ***Document Electronically Filed.***

CONSENT ORDER REGARDING STUDY AREA 5 SHALLOW GROUNDWATER REMEDY

WHEREAS, on January 21, 2010, the Court entered the Consent Decree Regarding Remediation of the Study Area 5 Shallow Groundwater and the Site 79 Residential Properties (ECF 303 in Docket No. 05-5955) ("Study Area 5 Shallow Groundwater Consent Decree") agreed to by and between Honeywell International Inc. ("Honeywell") and Plaintiffs Hackensack

Riverkeeper, Inc., William Sheehan, Winston Clarke and Lawrence Baker[1] ("collectively Riverkeeper"); and

WHEREAS, Study Area 5 is comprised of five sites designated by the New Jersey Department of Environmental Protection ("NJDEP") as Sites 79, 90, 117, 153, and 184; and

WHEREAS, the Study Area 5 Shallow Groundwater Consent Decree addresses shallow groundwater in Study Area 5, excluding shallow groundwater in the New Jersey City University ("NJCU") Commercial and Residential Areas (Sites 90 and 184), but including the shallow groundwater in Site 153, and any shallow groundwater outside and downgradient of Study Area 5 that is found pursuant to delineation under paragraph 63, 68, or 71 of the Study Area 5 Shallow Groundwater Consent Decree to be part of the zone of contamination which extends from Study Area 5; and

WHEREAS, the remediation of shallow groundwater within the NJCU Commercial and Residential Areas (Sites 90 and 184) is governed by the Amended Consent Decree Regarding Remediation of the New Jersey City University Redevelopment Area (ECF 1506) ("NJCU Consent Decree") entered by the Court on September 21, 2017; and

WHEREAS, the terms "NJCU Property" and "NJCU Commercial AOC" are defined in paragraphs 19 and 21 of the NJCU Consent Decree and shall have the same meanings in this Order; and

WHEREAS, the remediation of Study Area 5 Shallow Groundwater within the Site 79 Ciasulli Property is governed by the Consent Decree Regarding Sites 79 and 153 South (ECF 301 in Docket No. 05-5955) ("Sites 79 and 153 South Consent Decree") entered by the Court on January 21, 2010; and

[1] Mr. Baker is now deceased. *See* ECF 1627.

WHEREAS, this Remedy Order will govern the remediation of Study Area 5 Shallow Groundwater within and flowing offsite of Site 117 and Site 153; and

WHEREAS, Jersey City Fields, LLC owns part of the property that comprises Site 117 and Honeywell owns the remainder of Site 117, and Site 117 is subject to NJDEP Remedial Action Permits for which Honeywell is responsible for monitoring and maintaining the engineering and institutional controls related to soil and groundwater remedial actions for chromium-related contamination; and

WHEREAS, on February 5, 2010, upon separate motions filed by Riverkeeper and Honeywell, the Court ordered (ECF Nos. 310, 312) the voluntary dismissal without prejudice of all claims against Jersey City Fields, LLC, and that any party to the action may seek leave to refile such claims solely for the purposes of enforcing Honeywell's obligations under the Study Area 5 Shallow Groundwater Consent Decree or any other decrees or orders entered in this action; and

WHEREAS, Honeywell owns the property that comprises Site 153, and such property is subject to an easement held by the City of Bayonne for purposes of its operation and maintenance of the pipeline that runs the length of Site 153 and carries sewage from the City of Bayonne to the regional wastewater treatment plant operated by the Passaic Valley Sewerage Commission, and the New Jersey Department of Transportation ("NJDOT") has right of way for Route 440 that abuts the western perimeter of the property; and

WHEREAS, paragraph 64 of the Study Area 5 Shallow Groundwater Consent Decree requires Honeywell to submit a proposal for remedial actions that may be required to address chromium contamination of Study Area 5 Shallow Groundwater; and

WHEREAS, Honeywell submitted to the NJDEP a Shallow Groundwater Summary Report for Site 117 on September 30, 2011; and

WHEREAS, the 2011 Shallow Groundwater Summary Report for Site 117 concluded that shallow groundwater at Site 117 had been fully delineated; and

WHEREAS, groundwater data presented in the 2011 Shallow Groundwater Summary Report for Site 117 and subsequent monitoring indicate that: 1) high concentrations of total chromium are present in the shallow groundwater in the northwestern portion of Site 117; 2) near the eastern boundary of the site, high concentrations of chromium detected in the late 1990s have not reoccurred; 3) data from the central portion of the site is insufficient to draw conclusions as to the trend of the chromium concentrations; 4) near the western boundary of the site, concentrations of chromium have fluctuated since the 1990s and no clear trend is apparent; 5) the area in which the concentration of total chromium in Site 117 shallow groundwater exceeds the NJDEP Groundwater Quality Standard ("GWQS") of 70 parts per billion ("ppb") of total chromium is generally limited to the western portion of Site 117; and

WHEREAS, the 2011 Shallow Groundwater Summary Report for Site 117 concluded that: 1) elevated chromium concentrations that may be migrating downward to the intermediate or deep groundwater in the area of monitoring well 117-MW-S4 are being addressed by the regional groundwater remedy, which includes the existing GWET downgradient pumping system; 2) Site 117 is capped, which reduces the likelihood of contact with contaminated groundwater; 3) groundwater beneath the Site and surrounding area is not used as a source of potable water; 4) ongoing monitoring as part of the Study Areas 5-7 regional deep and bedrock groundwater remedy and the Integrated Sampling and Analysis Plan ("SAP") will continue to document regional groundwater conditions; and 5) NJDEP-required Institutional Controls, including a Classification Exception Area, restrict shallow groundwater use in the area; and

WHEREAS, since the issuance of the 2011 Shallow Groundwater Summary Report, fluctuations in total chromium concentrations in Site 117 and Site 153 shallow groundwater have been observed in several of the monitoring wells that have had more than one sampling event; and

WHEREAS, chromium-contaminated soils remain in place on Site 117 that are a source material for the Site 117 shallow groundwater chromium contamination; and

WHEREAS, the 2011 Shallow Groundwater Summary Report for Site 117 recommended monitored natural attenuation as the appropriate remedial action for shallow groundwater, and

WHEREAS, the 2011 Shallow Groundwater Summary Report for Site 117 also recommended long-term monitoring and maintenance of shallow groundwater pursuant to an NJDEP remedial action shallow groundwater permit and establishment of a Classification Exception Area ("CEA") for regional shallow groundwater; and

WHEREAS, NJDEP approved the 2011 Shallow Groundwater Summary Report for Site 117, on July 3, 2012; and

WHEREAS, Riverkeeper and Honeywell have agreed that the Shallow Groundwater Remedy (as further defined below in Paragraphs 3 and 4) for Study Area 5 Shallow Groundwater should consist of long-term monitoring, monitored natural attenuation and institutional controls consisting of a CEA, Long-Term Monitoring Plan ("LTMP"), Remedial Action Permits for Shallow Groundwater, Worker Protection Plan for Site 117, and the Procedure for Coordinating Utility Work Within Chromium Soil Areas for the City of Bayonne ("SOP"), which includes a Worker Training Manual for Site 153; and

WHEREAS, the Site 153 Shallow Groundwater Remedy was addressed in the combined Remedial Investigation Report/Remedial Action Work Plan/Remedial Action Report ("Site 153

RIR/RAWP/RAR") submitted to NJDEP in March 2015 and the Site 153 RIR/RAWP/RAR Addendum submitted in November 2016; and

WHEREAS, the Site 153 RIR/RAWP/RAR indicated that shallow groundwater at Site 153 had been fully delineated; and

WHEREAS, the Site 153 RIR/RAWP/RAR found that 1) the Site 153 chromium-contaminated soils remain in place at depths greater than 3 feet below ground surface and are a source material for the Site 153 groundwater chromium contamination; 2) shallow groundwater in Site 153 exceeds the NJDEP GWQS for total chromium; and 3) Site 153 South is capped with approximately 3 feet of clean fill and asphalt, which reduces the likelihood of contact with contaminated groundwater; 4) Site 153 North is capped with a linear low density polyethylene ("LLDPE") liner and geo-composite drainage layer with clean fill and pavement surface which reduces the likelihood of contact with contaminated groundwater; and

WHEREAS, the Site 153 RIR/RAWP/RAR recommended monitored natural attenuation, including long-term monitoring and maintenance pursuant to an NJDEP Remedial Action Permit and establishment of a CEA as the remedy for contaminated shallow groundwater at Site 153; and

WHEREAS, NJDEP approved the Site 153 RIR/RAWP/RAR on September 14, 2017; and

WHEREAS, the NJCU Consent Decree and the Sites 79 and 153 South Consent Decree, which govern remediation of contaminated soils within Site 153, require additional remedial action upon repair or replacement of any section of the sewer lines within Site 153; and

WHEREAS, consistent with the recommendations of the 2011 Shallow Groundwater Summary Report for Site 117 and the Site 153 RIR/RAWP/RAR, in 2012, NJDEP approved and Honeywell established a regional CEA for Shallow Groundwater that includes Study Area 5 (Site 117 and Site 153); and

WHEREAS, in 2018 the CEAs for Site 117 and Site 153 were modified as part of the Groundwater Remedial Action Permit Applications to create CEAs for Site 117 Shallow Groundwater (CEA100167476 established 2/16/2012) and Site 153 Shallow Groundwater (CEA101455512 established 2/16/2012);

WHEREAS, consistent with the recommendations of the 2011 Shallow Groundwater Summary Report for Site 117 and the Site 153 RIR/RAWP/RAR, NJDEP approved Groundwater Remedial Action Permits on July 18, 2018, (that were modified on May 23, 2023) for Site 117 and on August 14, 2018, for Site 153, which establish Honeywell's long-term obligations to monitor and maintain the Shallow Groundwater Remedy for Study Area 5; and

WHEREAS, Study Area 5 Shallow Groundwater sampling conducted in November 2019, 2021, and 2023 found that within Site 153 and Site 117 shallow groundwater continues to exceed the NJDEP GWQS of 70 ppb total chromium; and

WHEREAS, the Study Area 5 Shallow Groundwater is expected to exceed the NJDEP GWQS for total chromium indefinitely in portions of Study Area 5 due to the presence of chromium-contaminated soils remaining beneath capped areas; and

WHEREAS, the Site 117 contaminated-soil engineering control includes a geosynthetic cap that is mostly covered by asphalt or building structures, that was installed as part of a remedial action for soils, and that limits exposure to soil and groundwater contamination; and

WHEREAS, the shallow groundwater engineering controls installed on the NJCU West Campus Property to prevent chromium-contaminated groundwater from migrating outside of the NJCU Commercial Area of Concern include, among other engineered features: an underground hydraulic barrier wall installed along part of the border between the NJCU and Site 117 properties,

that functions as a hydraulic control between those properties, and an underground hydraulic barrier wall installed along the border between the NJCU and Site 153 North properties; and

WHEREAS, in portions of Site 153 and some western portions of Site 117, a highly organic deposit of peat and fine-grained sediments consisting primarily of silt and clay, known as the Meadow Mat, is located below the shallow groundwater zone and restricts the movement of groundwater between the shallow zone and deeper flow zones; and

WHEREAS, the decay of organic matter in the Meadow Mat creates reducing conditions in the adjoining groundwater; and

WHEREAS, in sufficiently reducing conditions, dissolved hexavalent chromium is reduced to trivalent chromium, which is much less toxic, less soluble, and less mobile; and

WHEREAS, in the portions of Site 153 and Site 117 that are capped, the cap is located above the shallow groundwater zone and restricts the infiltration of surface water into the contaminated groundwater in the shallow zone; and

WHEREAS, the Sites 117 and 153 caps were designed for the sole purpose of containing soil contamination, and may have the effect of promoting reducing conditions for contaminated shallow groundwater in areas above the Meadow Mat; and

WHEREAS, shallow groundwater movement is generally from east to west across Study Area 5 towards Route 440; and

WHEREAS, the offsite groundwater flow direction from Sites 117 and 153 may be characterized as follows: groundwater from the central and southern portion of Site 117 and Site 153 South flows to the west and southwest, and contaminated groundwater from the northwest portion of Site 117 and Site 153 North flows to the west and northwest, with a significant vertically downward component in some or all of the areas without the Meadow Mat; and

WHEREAS, the shallow groundwater that horizontally flows offsite of Sites 117 and 153 to the northwest may move downward into deeper groundwater zones through penetrations in the Meadow Mat layer such as those associated with the combined sewer lines beneath Route 440; and

WHEREAS, a portion of the groundwater located to the east of the eastern edge of the Meadow Mat on Site 117 flows downward directly into deeper zones; and

WHEREAS, contaminated groundwater which flows downward from the shallow zone into deeper groundwater zones where the Meadow Mat is absent and then flows to the northwest is captured by either the deep groundwater remedy Groundwater Extraction and Treatment ("GWET") system implemented pursuant to the Deep Overburden and Bedrock Groundwater Remedies Consent Order, ECF 898, September 3, 2008, or the groundwater sink associated with the Jersey City Municipal Utilities Authority ("JCMUA") grit chamber from which it eventually flows to the regional wastewater treatment plant operated by the Passaic Valley Sewerage Commission; and

WHEREAS, the Parties agree that some of the Study Area 5 Shallow Groundwater flows offsite from Study Area 5 in a generally southward and southwestward direction; and

WHEREAS, the Parties do not agree as to the extent and specific pathways of migration of chromium-contaminated shallow groundwater from Study Area 5 to the south and southwest; and

WHEREAS, Plaintiffs have asserted that chromium-contaminated shallow groundwater may be flowing to the south and southwest through the bedding of the interceptor sewer line underneath Route 440; and

WHEREAS, Honeywell disagrees with Plaintiffs' contention that the interceptor sewer line bedding is a viable pathway for preferential movement of chromium-contaminated shallow groundwater; and

WHEREAS, sampling of the interceptor sewer line pipe bedding to assess its geotechnical properties and permeability is currently not technically feasible due to the presence of Route 440 above the sewer line; and

WHEREAS, NJDOT has indicated it may engage in repair or expansion of Route 440 in the future, which may make sampling of the interceptor sewer line pipe bedding feasible; and

WHEREAS, on October 27, 2021, the Special Master corresponded with NJDOT notifying NJDOT of the potential for chromium-contaminated soils to be present beneath Route 440, and identifying the need for coordination with Honeywell and the Parties with respect to any future work at Route 440 that might involve contact with chromium-contaminated materials, and requesting that NJDOT further allow Honeywell to sample the interceptor sewer bedding materials during future work to rehabilitate Route 440; and

WHEREAS, on January 21, 2022, NJDOT responded to the Special Master's correspondence of October 27, 2021, agreeing to coordinate with Honeywell and the Parties with respect to any future work at Route 440 that might involve contact with chromium-contaminated materials, and to allow Honeywell to sample the interceptor sewer bedding materials during future work on Route 440; and

WHEREAS, in 2022, the JCMUA engaged in replacement of portions of its Combined Sewer Overflow ("CSO") pipe at the intersection of Route 440 and Danforth Avenue in Jersey City, which flows from the Route 440 Interceptor Sewer line to an outfall at Newark Bay; and

WHEREAS, during JCMUA's replacement activities, Honeywell took samples of the soils comprising the bedding of the original CSO pipe, and conducted geotechnical testing of the bedding; and

WHEREAS, Honeywell provided the results of the geotechnical testing of the CSO pipe bedding samples and clarified the configuration of the CSO to the Special Master and the Parties in November 2022; and

WHEREAS, Honeywell reported that the results showed that the CSO pipe bedding is 77.3% sand and 7.9% silt, which represents low permeability material; and

WHEREAS, the Jersey City Municipal Utilities Authority ("JCMUA") verbally reported to Plaintiffs that the water level in the CSO pipe is maintained below mean sea level by a check valve; and

WHEREAS, these findings indicate that the CSO pipe bedding is not a viable pathway for shallow groundwater movement west to Newark Bay; and

WHEREAS, these finding do not address whether infiltration into the CSO could be a groundwater pathway; and

WHEREAS, the parties disagree as to whether infiltration into the CSO could be a pathway for contaminated groundwater movement west to Newark Bay; and

WHEREAS, the purpose of a remedial action is to implement a remedy that removes, treats, or isolates contamination, and that is protective of the public health, safety, and the environment; and

WHEREAS, Honeywell and Riverkeeper have reached agreement on a remedy for shallow groundwater at Study Area 5 consisting of monitored natural attenuation, institutional

controls, and long-term monitoring, and, as appropriate, further investigation of the interceptor pipe bedding, as set forth in greater detail below; and

WHEREAS, a monitored natural attenuation remedy relies on natural attenuation processes to eventually achieve the applicable groundwater remediation standard; and

WHEREAS, natural attenuation includes a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, and/or concentration of contaminants in ground water; and

WHEREAS, source control and long-term performance monitoring are fundamental components of any monitored natural attenuation remedy; and

WHEREAS, the engineering controls in place for the soil remedies at Sites 117 and 153 function to limit contact with contaminated soils that remain in place and that are the source of Study Area 5 contaminated shallow groundwater; and

WHEREAS, reducing conditions in areas where the Meadow Mat is present promote natural attenuation within the shallow groundwater; and

WHEREAS, the Monitored Natural Attenuation remedy approved by NJDEP, and agreed to herein by the Parties, includes the potential for additional groundwater remediation to be implemented if the long-term monitoring indicates that monitored natural attenuation is no longer protective of the public health, safety, and/or the environment; and

WHEREAS, the Study Area 5 Shallow Groundwater Consent Decree, Article V, ECF 303, which governs financial assurances, is incorporated into this Order and such financial assurances may be drawn upon in accordance with the procedures set forth there if Honeywell fails to diligently and in good faith comply with the terms of this Order.

NOW THEREFORE, it is hereby ordered and decreed as follows:

1. **Recitals.** The above recitals are incorporated herein as though fully set forth as operative provisions of this Consent Order.

2. **Study Area 5 Shallow Groundwater Consent Decree**. This Order is intended to supplement the Study Area 5 Shallow Groundwater Consent Decree. Unless explicitly stated otherwise in this Order, all provisions of the Study Area 5 Shallow Groundwater Consent Decree remain in full force and effect.

3. **Scope of this Order.** This Order addresses Study Area 5 Shallow Groundwater as set forth in paragraph 35 of the Study Area 5 Shallow Groundwater Consent Decree. Shallow groundwater at the NJCU Property (Sites 90 and 184) is not included in this Order because the definition of Study Area 5 Shallow Groundwater in paragraph 35 of the Study Area 5 Shallow Groundwater Consent Decree excludes it. Shallow groundwater on the NJCU property is not included in this Order because it is addressed through the NJCU Consent Decree and NJCU Long-Term Monitoring Plan. Shallow Groundwater at Site 79 is not included in this Order because it is addressed through the Sites 79 and 153 South Consent Decree and NJDEP subsequently issued a No Further Action letter for groundwater with respect to chromium at Site 79 on May 7, 2012.

4. **Study Area 5 Shallow Groundwater Remedy.** The remedy for Study Area 5 Shallow Groundwater, pursuant to paragraph 64 of the Study Area 5 Shallow Groundwater Consent Decree, shall consist of the following:

    a. Honeywell shall maintain use restrictions for shallow groundwater at Sites 117 and 153 pursuant to the CEAs approved by the NJDEP in 2012 and pursuant to the NJDEP Remedial Action Groundwater Permits (attached

hereto as Exhibits 1 (ECF 1814-1) and 2 (ECF 1814-2))[2]. Honeywell is obligated to maintain the CEAs and meet the requirements of the CEAs until the Study Area 5 Shallow Groundwater is remediated such that shallow groundwater concentrations of total chromium are below 70 ppb or the NJDEP GWQS for total chromium in effect at the time, whichever is more stringent.

b. Honeywell shall remediate Study Area 5 Shallow Groundwater that exceeds the NJDEP GWQS of 70 ppb for total chromium through Monitored Natural Attenuation as follows:

   i. The Monitored Natural Attenuation remedy shall require ongoing monitoring of shallow groundwater at Site 117 and Site 153 as required by the NJDEP Groundwater Remedial Action Permits, Shallow Groundwater LTMP, and Integrated SAP; and

   ii. The Monitored Natural Attenuation remedy and the required monitoring and maintenance shall continue until such time that Study Area 5 Shallow Groundwater total chromium concentrations are below 70 ppb or the NJDEP GWQS for total chromium in place at the time, whichever is more stringent; and

   iii. The Monitored Natural Attenuation remedy shall be evaluated by Honeywell at least: (1) every five (5) years; and (2) at any time that events on or near Site 117 and/or Site 153 significantly impact the

[2] All attachments and Exhibits to this Remedy Order are attached for informational purposes only and are not incorporated as an Order of the Court. All attachments and Exhibits to this Remedy Order are the version of the document in place as of the date of this Remedy Order and each may be updated or amended in the future.

Monitored Natural Attenuation remedy. The purpose of those remedy evaluations is to determine the continued effectiveness of natural attenuation and to determine whether the Monitored Natural Attenuation remedy remains protective (an "effectiveness evaluation"); and

iv. Further shallow groundwater remediation shall be required if long-term monitoring or the effectiveness evaluations indicate that the Monitored Natural Attenuation remedy is ineffective, or no longer protective.

c. In the event that construction or rehabilitation of Route 440 allows for the investigation of the interceptor sewer line bedding materials located under Route 440, Honeywell will:

i. Undertake best efforts to test the interceptor sewer line bedding material to evaluate its geotechnical properties and permeability; and

ii. Report to the Special Master and the Parties the results of its testing of the interceptor sewer line bedding materials; and

iii. Provide recommendations to the Special Master and the Parties for any further action that may be appropriate with respect to the Study Area 5 Shallow Groundwater Remedy based on the results of the testing of the interceptor sewer line bedding materials.

d. Riverkeeper reserves the right to propose further action with respect to the Study Area 5 Shallow Groundwater Remedy based on the results of the

long-term monitoring, the effectiveness evaluations, and/or the testing of the interceptor sewer line bedding materials. Proposals for further action with respect to the Study Area 5 Shallow Groundwater Remedy shall be subject to the procedures of paragraphs 78(c) – (i) of the Study Area 5 Shallow Groundwater Consent Decree.

e. Honeywell shall maintain and comply with all requirements of the Shallow Groundwater Remedial Action Permits for Site 117 and Site 153 issued by NJDEP ("Shallow Groundwater Permits"). All reports required by the Shallow Groundwater Permits shall be submitted to the Special Master and the Riverkeeper. Honeywell shall comply with the requirements of the Shallow Groundwater Permits until such time that Study Area 5 Shallow Groundwater total chromium concentrations are below 70 ppb or meets the NJDEP GWQS for total chromium in place at the time, whichever is more stringent.

f. The long-term monitoring of Study Area 5 Shallow Groundwater shall be set forth in a Study Area 5 Shallow Groundwater LTMP, which shall be consistent with paragraphs 70 and 71 of the Study Area 5 Shallow Groundwater Consent Decree. The LTMP shall be subject to the review and approval procedures of paragraph 78 of the Study Area 5 Shallow Groundwater Consent Decree. The Study Area 5 Shallow Groundwater LTMP shall be required until such time that Study Area 5 Shallow Groundwater total chromium concentrations are below 70 ppb or meet the

NJDEP GWQS for total chromium in place at the time, whichever is more stringent.

g. Pursuant to the Site 117 and Site 153 Groundwater Remedial Action Permits, Honeywell "shall operate, maintain, and monitor the institutional and/or engineering controls at Site 117 and Site 153, to ensure that the remedial action remains protective of public health and safety and the environment, and to ensure compliance with the requirements of the Ground Water Remedial Action Permit".

h. Honeywell shall monitor Study Area 5 Shallow Groundwater, consistent with the Study Area 5 Shallow Groundwater Permits for Sites 117 and 153 and the Study Area 5 Shallow Groundwater LTMP. The minimum monitoring frequency for Study Area 5 Shallow Groundwater shall be as prescribed below but may be modified by mutual agreement of Honeywell and Riverkeeper through revisions to the Study Area 5 Shallow Groundwater LTMP. If the parties are unable to reach mutual agreement as to changes to the LTMP, the proposed changes will be subject to the review and approval procedures of paragraph 78 of the Study Area 5 Shallow Groundwater Consent Decree.

    i. Honeywell shall conduct groundwater level monitoring at monitoring wells for Sites 117 and 153 quarterly or as otherwise prescribed in the NJDEP Groundwater Remedial Action Permits and the Study Area 5 Shallow Groundwater LTMP.

ii. Honeywell shall conduct groundwater quality monitoring at monitoring wells for Sites 117 and 153 biennially (*i.e.*, every two years which sampling began in 2019), or as otherwise prescribed in the NJDEP Groundwater Remedial Action Permits and the Study Area 5 Shallow Groundwater LTMP.

iii. All shallow groundwater monitoring results will be reported annually to the Special Master and the Riverkeeper. Shallow groundwater monitoring will be reported as part of the Annual Integrated Groundwater Performance Reports for Study Area 5 - 7. As part of each Annual Integrated Groundwater Performance Report, Honeywell will report either the results of the 5-year effectiveness evaluation required by this Order, or in years without a 5-year effectiveness evaluation, any events that may create a need for the Shallow Groundwater Remedy to be revised or modified. Logs of the groundwater monitoring will be provided to the Special Master and Riverkeeper annually.

iv. Report quarterly to the Special Master and to the Riverkeeper with plots of the Site 117 and Site 153 quarterly groundwater level monitoring.

v. Report annually to the Special Master and to the Riverkeeper regarding compliance with the CEAs, Groundwater Remedial Action Permits, Study Area 5 Shallow Groundwater Long-Term Monitoring Plan, Site 117 Worker Protection Plan, and Site 153

SOP and Worker Training Plan. This may be done as part of the Integrated Annual Groundwater Reports for SA-5/6/7 or as a separate letter correspondence.

i. Honeywell shall report to the property owner, NJDEP, the Special Master, and the Riverkeeper any change in land use or use of site groundwater of which Honeywell becomes aware that is inconsistent with the uses established by the CEA. Honeywell shall make its report within 10 business days of learning of any changed use.

j. Honeywell shall report to the property owner, NJDEP, the Special Master, and the Riverkeeper any exposure to or surface discharge of Study Area 5 Shallow Groundwater of which Honeywell becomes aware. Honeywell shall make its report within 10 business days of learning of any such exposure.

k. Honeywell has developed a Worker Protection Plan for Site 117 to be used by Site owners, lessees, and/or operators for the protection of workers who may be exposed to chromium-contaminated soil or groundwater in conjunction with subsurface utility or other work on the property. Honeywell shall make Site 117 property owners aware of the requirements of the Worker Protection Plan and will make available to the Site 117 property owners periodic trainings on the requirements of the Worker Protection Plan for the benefit of their lessees, tenants, or operators. The Worker Protection Plan for Site 117 is attached as Exhibit 3 (ECF 1814-3) to this Order.

l. Honeywell has developed, pursuant to the NJCU Consent Decree, an SOP to be used by the Site 153 owner, easement holders, and/or operators for the protection of workers who may be exposed to chromium-contaminated soil or groundwater in conjunction with utility or other subsurface work on the property. Honeywell shall, pursuant to the NJCU Consent Decree, make the Site 153 property owner and easement holders aware of requirements of the SOP and will make available periodic trainings on the requirements of the Worker Training Manual for the benefit of their lessees, easement holders, or operators. The SOP is attached as Exhibit 4A and Exhibit 4B[3] (ECF 1814-4 and ECF 1814-5) to this Order.

5. **Sites 117 and 153 Soil Remedies**. The soil remedies at Sites 117 and 153 are not subjects of this Order, except insofar as the remaining chromium-contaminated soils are a source of groundwater contaminants.

a. Honeywell has established a remedy for chromium-contaminated soils at Site 117, approved by NJDEP in 1998 through a No Further Action letter. The soil remedy consists of engineering controls that limit contact with chromium-contaminated soils and groundwater including a multi-layered cap system including a geomembrane liner, clean fill and surface features consisting of pavement or concrete over most of Site 117 and some small

[3] Exhibit 4 consists of two parts. Exhibit 4A is the Site 153 SOP dated November 2016. Exhibit 4B is the Worker Training Plan applicable to Site 153 that is Appendix C to the Site 153 SOP. Exhibit 4B includes, as Attachment G-1, the Site 153 Deed Notice recorded in 2010. This Deed Notice has been superseded by a more recent Site 153 Deed Notice and has therefore been removed from Exhibit 4B. The more recent Site 153 Deed Notice recorded in 2019 is attached as Exhibit 5 (ECF 1814-6) to this Remedy Order. Attachments G-2 and H to Exhibit 4B have also been removed since they apply to shallow groundwater at the New Jersey City University site, which is not within the scope of this Remedy Order.

vegetative landscaped areas. Honeywell and the property owner have also put in place deed notices for Site 117 requiring Honeywell to maintain the integrity of the engineering controls for the Site 117 soil remedy, attached as Exhibit 3 (ECF 1814-3) (Appendices D-1 and D-2) to this Order.

b. Pursuant to the NJCU Consent Decree and the Site 79 and 153 South Consent Decree, Honeywell has established a remedy for chromium-contaminated soils at Site 153. The Site 153 soil remedy consists of engineering controls, including asphalt and/or vegetated clean cover soils to approximately 3 feet below ground surface along the length of Site 153 South and a geosynthetic cap at Site 153 North adjacent to the NJCU Commercial Area that limit contact with chromium-contaminated soils and groundwater. Honeywell has also put in place a deed notice for Site 153 requiring Honeywell to maintain the integrity of the engineering controls for the Site 153 soil remedy, attached as Exhibit 5 (ECF 1814-6).

c. As part of the Study Area 5 Shallow Groundwater Remedy Order Honeywell shall:

    i. Provide to the Special Master and to the Riverkeeper copies of the Biennial Reports provided to NJDEP pursuant to the Site 117 Remedial Action Soil Permits and pursuant to the Site 117 Deed Notices; and

    ii. Report annually to the Special Master and to the Riverkeeper regarding quarterly inspections of Site 117; and

iii. Report annually to the Special Master and to the Riverkeeper regarding any disturbances to the caps at Sites 117 and 153 and/or changes in land use that would significantly impact the Shallow Groundwater Remedy on Site 117; and

iv. With respect to activities undertaken by Plaintiffs pursuant to Section 5 of this Order, Plaintiffs shall be entitled to payment of fees and expenses pursuant to paragraph 110 of the Shallow Groundwater Consent Decree for such activities only to the extent that those activities relate to the Monitored Natural Attenuation remedy for shallow groundwater.

6. **Reservation of Rights**. Riverkeeper reserves the right to propose further action, investigation, and/or monitoring, with respect to the Study Area 5 Shallow Groundwater Remedy, should the long-term monitoring, or other new information, call into question the efficacy of the Monitored Natural Attenuation remedy. Riverkeeper also reserves the right to propose further remediation, should the results of such monitoring and/or investigations indicate that monitored natural attenuation is no longer protective of the public health, safety, and/or the environment. Honeywell reserves the right to propose modification of the Study Area 5 Shallow Groundwater Remedy, including modifying the frequency or extent of groundwater monitoring. Proposals for modification of the Study Area 5 Shallow Groundwater Remedy shall be subject to the procedures of paragraphs 78(c) – (i) of the Study Area 5 Shallow Groundwater Consent Decree.

Consented to and approved for entry:

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APPROVED and **ENTERED** as an Order of this Court this 8th day of October, 2025.

Hon. Brian Martinotti
United States District Judge

State of New Jersey

PHIL MURPHY
Governor

SHEILA OLIVER
Lt. Governor

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May 23, 2023

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Remediation Design and Construction
Bayfront Redevelopment, LLC
115 Tabor Road
Morris Plains, NJ 07950

Kim Fields, Authorized Manager
Jersey City Fields, LLC
550 SE 5th Avenue, Apt. 304S
Boca Raton, FL 33432

RE: Ground Water Remedial Action Permit
Site: Hudson County Chromate 117 – Shallow Ground Water
A/K/A: Study Area 5 – Site 117, Former Ryerson Steel
Joseph T. Ryerson & Son
Address: 440 Route 440
City: Jersey City
County: Hudson
SRP Program Interest #: 008809
Ground Water Remedial Action Permit #: RAP210001
(Supersedes RAP170001)
Block: 26101 Lot: 1.01

Dear Mr. Dehghi and Ms. Fields:

Enclosed is a Ground Water Remedial Action Permit issued pursuant to the Site Remediation Reform Act, 58:10C-1 et seq. and the Administrative Requirements for the Remediation of Contaminated Sites at N.J.A.C. 7:26C-1 et seq. This permit becomes effective on 05/26/2023. Please note the referenced permit and

program interest numbers and refer to them when corresponding with the Department.
This modification is being issued due to a change in ground water sampling frequencies and parameters.

The enclosed permit requires the permittee to conduct monitoring, maintenance and evaluation for compliance and effectiveness of the remedial action and its associated institutional control. The permit establishes requirements necessary for demonstrating that the remedial action and control continue to be protective of public health, safety and the environment.

Annual Fees

Please be aware that there are annual fees associated with this permit in accordance with N.J.A.C. 7:26C-4.6. These annual permit fees will be handled by invoicing the fee billing contact we have on record:

Maria Kaouris, Director
Chromium Remediation
Honeywell International, Inc.
115 Tabor Road
Morris Plains, NJ 07950
Phone: (973) 455-2877
Email: maria.kaouris@honeywell.com

Any changes to this contact should be brought to the Department's attention. Changes to fee billing contacts are updates and are not considered modifications to the permit.

The Department looks forward to future continued cooperation in working together to provide a healthy environment for the citizens of New Jersey and to protect its resources. Going forward, questions or comments regarding this permit should be addressed to Robert Steinhagen with the Bureau of Remedial Action Permitting at Robert.Steinhagen@dep.nj.gov or (609) 633-1472.

Sincerely,



Lynne Mitchell, Assistant Director
Remediation Review Element

Enclosure

cc: Municipal Clerk, Jersey City
SeanG@jcnj.org

Jersey City Health and Human Services
healthierjc@jcnj.org

Hudson County Register
djennings@hcnj.us

Hudson Regional Health Commission
adequina@hudsonregionalhealth.org

Dennis Nagg
Dennis.nagg@wsp.com

New Jersey Department of Environmental Protection

Bureau of Remedial Action Permitting
401 East State Street
P.O. Box 420
Mail Code 401-05S
Trenton, NJ 08625-0420
Phone: (609) 984-2990

GROUND WATER REMEDIAL ACTION PERMIT
Monitored Natural Attenuation

The New Jersey Department of Environmental Protection hereby grants you a Remedial Action Permit pursuant to N.J.S.A. 58:10C-1 et seq. and N.J.A.C. 7:26C-1 et seq. for the facility/activity named in this document. This permit is the regulatory mechanism used by the Department to help ensure your remedial action will be protective of human health and the environment.

This permit establishes the monitoring, maintenance, and evaluation requirements for determining the effectiveness of an on-going ground water remediation. The monitoring program for this site shall be consistent with the attached Ground Water Monitoring Plan. A Classification Exception Area/Well Restriction Area (CEA/WRA) has been established for the site and is consistent with the attached CEA/WRA Fact Sheet.

Site: **Hudson County Chromate 117 – Shallow Ground Water**
A/K/A: **Study Area 5 - Site 117, Former Ryerson Steel**

Facility Address:	**SRP PI #:** 008809
440 Route 440 **Jersey City, NJ 07302** **Hudson County**	**Permit #:** RAP210001 (supersedes RAP170001) **Modification Issuance Date: 05/23/2023** **Effective Date: 05/23/2023**

Person Responsible for Conducting the Remediation - Co-Permittee:

Benny Dehghi, Director
HONEYWELL INTERNATIONAL INC
115 Tabor Road
Morris Plains, NJ 07950
Phone: (310) 512-2296
Email: benny.dehghi@honeywell.com

Property Owner - Co-Permittee:

Benny Dehghi, Director
BAYFRONT REDEVELOLPMENT LLC
115 Tabor Road
Morris Plains, NJ 07950
Phone: (310) 512-2296
Email: benny.dehghi@honeywell.com

Kim Fields, Authorized Manager
JERSEY CITY FIELDS LLC
550 SE 5th Avenue, Apt. 304S
Boca Raton, FL 33432
Phone: (561) 465-3140
Email: Kim@fields-realty.com

I. Authority

The Department is issuing this permit in accordance with N.J.S.A. 58:10C-1 et seq. and N.J.A.C. 7:26C-1et seq.

II. Permit Requirements

A. GROUND WATER MONITORING REPORTING AND REQUIREMENTS

1. Reporting Requirements

a. The permittee shall submit a monitoring report in accordance with the schedule in the attached Ground Water Monitoring Plan. Submit the monitoring report with the Remedial Action Protectiveness/Biennial Certification Form biennially from the effective date of this permit. [N.J.A.C. 7:26C- 7.9(a)]

b. The permittee shall maintain the Ground Water Remedial Action Permit until the remedial action is no longer needed to protect the public health and safety and the environment, and until all unrestricted use remediation standards are met. The permittee must to operate, maintain, and monitor the institutional and/or engineering controls at the site, to ensure that the remedial action remains protective of public health and safety and the environment, and to ensure compliance with the requirements of the Ground Water Remedial Action Permit. This includes but is not limited to site inspections, ground water sampling, biennial submission of a Ground Water Remedial Action Protectiveness/Biennial Certification Form and Report, responding to any activities involving the institutional and/or engineering controls at the site, and responding to any public inquiries regarding the current status of the site. [N.J.A.C. 7:26C- 2.3(a and b)]

2. Sampling and Analysis

a. Sampling is to occur according to the applicable method(s) obtained from the Field Sampling Procedures Manual (the sampling method is noted in the site-specific Quality Assurance Performance Plan). [N.J.A.C. 7:26E- 2.1]

b. Samples are to be analyzed for the parameters listed in the attached Ground Water Monitoring Plan using the method or most recent revision of the method noted in the site-specific Quality Assurance Performance Plan. The method chosen must have adequate sensitivity to meet all applicable remediation standards/screening levels. The permittee shall collect and analyze samples pursuant to the attached Ground Water Monitoring Plan. [N.J.A.C. 7:26E- 2.1]

B. REMEDIAL ACTION PROTECTIVENESS/BIENNIAL CERTIFICATION FORM

1. Reporting Requirements

a. The permittee shall prepare and submit to the Department a Remedial Action Protectiveness/Biennial Certification Form every two years following the anniversary of the date of the effective date of this permit. The certification shall be submitted on the required form provided by the Department. Submit a Remedial Action Protectiveness/Biennial Certification Form biennially from the effective date of this permit. [N.J.A.C. 7:26C- 7.7(a)1]

2. Evaluation Requirements

a. The permittee shall hire a Licensed Site Remediation Professional to prepare and certify that the remedial action continues to be protective of the public health and safety and the environment. [N.J.A.C. 7:26C- 1.5(a)2]

b. The permittee shall conduct the remediation in accordance with all applicable statutes, rules, and guidance. [N.J.A.C. 7:26C- 1.2(a)]

c. The Remedial Action Protectiveness/Biennial Certification Form shall include a comparison of the laws, Ground Water Quality Standards, and other regulations applicable at the time the Department established the ground water classification exception area, with any relevant subsequently promulgated or modified laws or regulations to determine whether the classification exception area remains protective. The results shall be provided in table format, comparing of applicable laws, regulations, and standards. [N.J.A.C. 7:26C- 7.9(b)2]

d. The Remedial Action Protectiveness/Biennial Certification Form shall include an evaluation of whether there are any planned changes within a 25-year water use planning horizon for the aquifer(s) in which the ground water classification exception area is located since the Department established the ground water classification exception area or the last completed biennial review, whichever is more recent. [N.J.A.C. 7:26C- 7.9(b)3]

e. The Remedial Action Protectiveness/Biennial Certification Form shall include an evaluation of whether there have been any actual changes in the ground water use since the Department established the ground water classification exception area or the last completed biennial review. The results of the evaluation of the changes in ground water use include a scaled map identifying all wells and/or waterlines found within one mile from any part of the boundaries of the ground water classification exception area. [N.J.A.C. 7:26C- 7.9(b)4]

f. The permittee shall maintain a maintenance and evaluation log for each monitoring well used to establish the ground water classification exception area. The log shall include a description of any well damage or vandalism identified or repairs completed. If any of the damage resulted in the decommissioning of a well, provide a copy of the Well Abandonment Report. [N.J.A.C. 7:26C-7.9(b)5]

g. The Remedial Action Protectiveness/Biennial Certification Form shall include an evaluation of any land use disturbance that may intercept the water table within the area of the ground water classification exception area that could result in a contaminated discharge to surface water. If any such disturbances are identified, sample the ground water/surface water downgradient and proximate to the land use disturbance to determine whether the ground water meets the more stringent of either: (1) The New Jersey Surface Water Quality Standards, N.J.A.C. 7:9B; or (2) The Federal Surface Water Quality Criteria, 40 CFR Part 131. [N.J.A.C. 7:26C- 7.9(b)6]

h. The Remedial Action Protectiveness/Biennial Certification Form shall include an evaluation of the fate and transport of the ground water contamination plume, including any additional remediation conducted, modification of the remedial action, or proposed revision of the ground water classification exception area, and apply for a modification of the Ground Water Remedial Action Permit to ensure that the remedial action remains protective of the public health and safety and the environment. [N.J.A.C. 7:26C- 7.9(b)7i and (d)2]

i. Within 180 calendar days after the anticipated expiration date of the ground water classification exception area, the permittee shall collect at least two rounds of ground water samples such that the time between sampling events accounts for seasonal fluctuations in the ground water table

and the number of ground water samples collected is representative of the entire horizontal and vertical extent of the ground water classification exception area. If ground water samples indicate that contaminant concentrations have decreased to or below the applicable ground water quality standards throughout the ground water classification exception area, then the permittee may request that the Department remove the ground water classification exception area pursuant to N.J.A.C. 7:26C-7.3(g) and terminate the Ground Water Remedial Action Permit pursuant to N.J.A.C. 7:26C-7.13. If ground water samples indicate that contaminant concentrations have not decreased to or below the applicable ground water quality standards throughout the ground water classification exception area, then the permittee shall modify the remedial action by re-modeling the fate and transport of the ground water contaminant plume, proposing a revision to the ground water classification exception area, and applying for a modification of the Ground Water Remedial Action Permit pursuant to N.J.A.C. 7:26C-7.12. [N.J.A.C. 7:26C- 7.9(f)]

C. FINANCIAL ASSURANCE REQUIREMENTS

1. No Engineering Control

a. Financial Assurance is not required since an engineering control is not in place for this site. [N.J.A.C. 7:26C- 7.10]

D. FEES

1. For each year hereafter on the anniversary of the effective date of this permit, the Department shall invoice the permittees the amount of the annual Remedial Action Permit Fee. [N.J.A.C. 7:26C- 4.6]

E. PERMIT TRANSFERS

1. The permittee shall, no later than 60 days after the sale or transfer of the property, or transfer of the operation of the property, or termination of a lease, submit a Remedial Action Permit Transfer/Change of Ownership Application and pay the permit transfer fee to the Department. [N.J.A.C. 7:26C- 7.11(b)]

F. PERMIT MODIFICATIONS

1. Ground Water Permit Modifications

a. The permittee shall apply to have the Department modify a Remedial Action Permit after a change in the remedial action pursuant to N.J.A.C. 7:26C-6.4. [N.J.A.C. 7:26C- 7.12(b)1]

b. The permittee shall apply to have the Department modify a Remedial Action Permit after the permittee changes its address. [N.J.A.C. 7:26C- 7.12(b)3]

G. PERMIT TERMINATIONS

1. A request for a permit termination can be filed by submitting a Remedial Action Permit Application to terminate the permit to the Department when the remedial action meets all applicable remediation standards without the need for the Remedial Action Permit and the remedial action is protective of the public health and safety and of the environment without the presence of the Remedial Action Permit. [N.J.A.C. 7:26C- 7.13]

H. FORM SUBMITTAL

1. Any forms, applications or documents required by this chapter that can be submitted in an electronic format shall be submitted electronically 90 days after the date that the Department informs the public in the New Jersey Register that the relevant electronic application is functional. [N.J.A.C. 7:26C- 1.6(c)]

2. All submissions required pursuant to this permit shall be made on forms approved and available from the Department. These forms and instructions for completing these forms can be found at http://www.nj.gov/dep/srp/srra/forms. [N.J.A.C. 7:26C- 1.6]

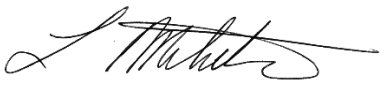
III. Permit Schedule

Permit Modification Effective Date: 05/23/2023	
Submission Requirement	**Due Date**
Submit a Remedial Action Protectiveness/Biennial Certification Form	07/25/2024
Submit a Remedial Action Protectiveness/Biennial Certification Form	07/25/2026
Submit a Remedial Action Protectiveness/Biennial Certification Form	07/25/2028
Submit a Remedial Action Protectiveness/Biennial Certification Form	07/25/2030
Submit a Remedial Action Protectiveness/Biennial Certification Form	07/25/2032
Submit a Remedial Action Protectiveness/Biennial Certification Form	07/25/2034
Submit a Remedial Action Protectiveness/Biennial Certification Form	07/25/2036
Submit a Remedial Action Protectiveness/Biennial Certification Form	07/25/2038
Submit a Remedial Action Protectiveness/Biennial Certification Form	07/25/2040
Submit a Remedial Action Protectiveness/Biennial Certification Form	07/25/2042
Submit a Remedial Action Protectiveness/Biennial Certification Form	07/25/2044
Submit a Remedial Action Protectiveness/Biennial Certification Form	07/25/2046
Submit a Remedial Action Protectiveness/Biennial Certification Form	07/25/2048
Submit a Ground Water Remedial Action Permit Application (Modification or Termination)	01/25/2049

Note: Remedial Action Protectiveness/Biennial Certification Forms are required to be submitted according to the schedule, and shall continue to be submitted until the Permit is terminated or modified.

Your Ground Water Remedial Action Permit under Administrative Requirements for the Remediation of Contaminated Sites, N.J.A.C. 7:26C-1 et seq. has been approved by the New Jersey Department of Environmental Protection.

Sincerely,



Lynne Mitchell, Assistant Director
Remediation Review Element

IV. Attachments:

A. CEA/WRA Fact Sheet
B. Ground Water Monitoring Plan

Attachment A
Classification Exception Area/Well Restriction Area Fact Sheet

Case Information:

Preferred Id:	008809
RAP Number:	RAP210001
Case Name:	Hudson County Chromate 117 Shallow Ground Water
Address:	440 Route 440 Jersey City
County:	Hudson

Facility Contacts:

Co-Permittees: **Person Responsible for Conducting the Remediation:**	Benny Dehghi, Director Global Remediation Honeywell International Inc. 115 Tabor Road Morris Plains NJ 07950 Phone: (310) 512-2296 Email: benny.dehghi@honeywell.com
Property Owner:	Kim Fields, Authorized Manager Jersey City Fields LLC 550 SE 5th Avenue, Apt. 304S Boca Raton FL 33432 Phone: (561) 465-3140 Email: Kim@fields-realty.com

---Site Location: Refer to Exhibit A ---

Block and Lot of the Case:

Block	Lots
21601	1.01, 1.02

Blocks and Lots of the CEA:

Subject Item	***Block***	***Lot***	***Municipality***	***Off-Site***
CEA100167476	21901	5	Jersey City	Yes
CEA100167476	21901	6	Jersey City	No
CEA100167476	21901	7	Jersey City	No
CEA100167476	21901	8	Jersey City	No
CEA100167476	21901	9	Jersey City	Yes
CEA100167476	21991	10	Jersey City	Yes
CEA100167476	21902	1	Jersey City	Yes
CEA100167476	21902	13.01	Jersey City	Yes
CEA100167476	21902	14.01	Jersey City	Yes
CEA100167476	21902	14.02	Jersey City	Yes
CEA100167476	21902	2.01	Jersey City	Yes
CEA100167476	21902	2.02	Jersey City	Yes
CEA100167476	21902.01	1	Jersey City	Yes
CEA100167476	21902.03	1	Jersey City	Yes
CEA100167476	21902.04	1	Jersey City	Yes
CEA100167476	22001	4	Jersey City	Yes
CEA100167476	24601	1	Jersey City	Yes
CEA100167476	24601	2	Jersey City	Yes
CEA100167476	24601	3	Jersey City	Yes
CEA100167476	24601	4	Jersey City	Yes
CEA100167476	24601	5	Jersey City	Yes
CEA100167476	24601	6	Jersey City	Yes
CEA100167476	24601	7	Jersey City	Yes
CEA100167476	24601	8	Jersey City	Yes
CEA100167476	24602	1	Jersey City	Yes
CEA100167476	26101	1.01	Jersey City	No
CEA100167476	26101	1.02	Jersey City	Yes
CEA100167476	26101	3	Jersey City	Yes
CEA100167476	26101	9	Jersey City	Yes

CEA Information:

Subject Item	***Description***
CEA100167476	Shallow Fill Layer

Subject Item	***Affected Aquifer***	***Vertical Depth***
CEA100167476	Fill	20

Subject Item	***Classification***
CEA100167476	II-A

Contaminants:

This CEA/WRA applies only to the contaminants listed in the table below. All constituent standards (N.J.A.C. 7:9C-1.6) apply at the designated boundary.

Subject Item	***Contaminant***	***Concentration (1)***	***GWQS (2)***
CEA100167476	Chromium	229,000 Micrograms Per Liter	70 Micrograms Per Liter
CEA100167476	Chromium (VI)	115,000 Micrograms Per Liter	70 Micrograms Per Liter

Note: *(1)* Maximum concentration detected at the time of CEA establishment
(2) Ground Water Quality Standards

--- CEA Boundaries: Refer to Exhibit B ---

Projected Term of CEA:

Subject Item	***Date Established***
CEA100167476	2/16/2012

Subject Item	***Duration in Years***
CEA100167476	Indeterminate

Subject Item	***Expected Expiration Date***
CEA100167476	Indeterminate

Note: Since ground water quality data indicates exceedance of contaminants above the Primary Drinking Water Standards, and the designated uses of Class II-A aquifers include potable use, the CEA established for this site is also a Well Restriction Area. The extent of the Well Restriction Area shall coincide with the boundaries of the CEA.

Well Restrictions set within the boundaries of the CEA

Subject Item	***Restriction***

CEA100167476	Double Case Wells: With the exception of monitoring wells installed into the first water bearing zone, any proposed well to be installed within the CEA/WRA boundary shall be double cased to an appropriate depth in order to prevent any vertical contaminant migration pathways. This depth is either into a confining layer or 50 feet below the vertical extent of the CEA.
CEA100167476	Evaluate Production Wells: Any proposed high capacity production wells in the immediate vicinity of the CEA/WRA should be pre-evaluated to determine if pumping from these wells would draw a portion of the contaminant plume into the cone of capture of the production wells or alter the configuration of the contaminant plume.
CEA100167476	Sample Potable Wells: Any potable well to be installed within the footprint of the CEA/WRA shall be sampled annually for the parameters of concern. The first sample shall be collected prior to using the well. If contamination is detected, contact your local Health Department. If the contamination is above the Safe Drinking Water Standards, then the NJDEP Hot Line should be called. Treatment is required for any well that has contamination above the Safe Drinking Water Standards.

Exhibit A (Site Location)

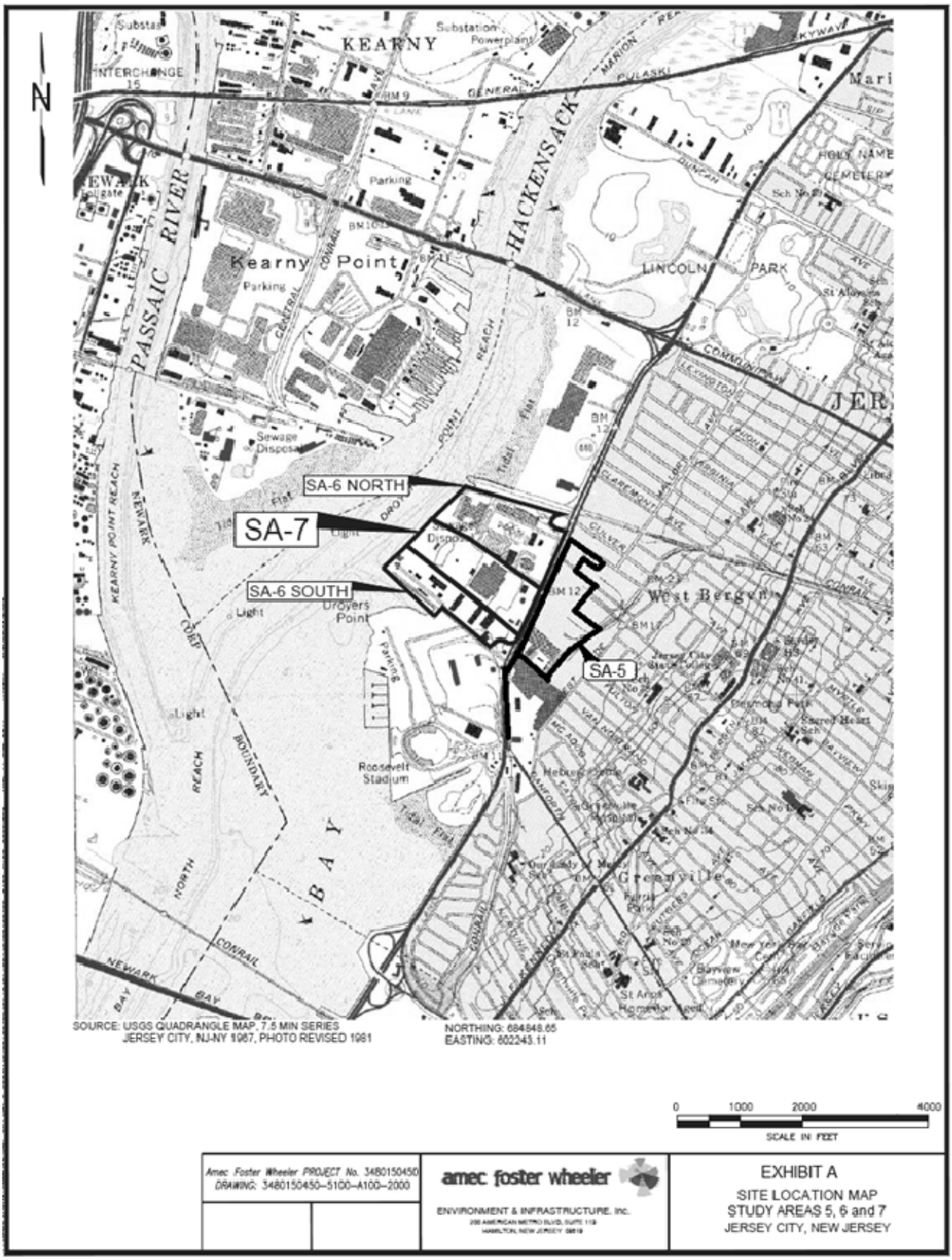


Exhibit B (CEA Boundaries)

Honeywell Main Facility Shallow Overburden Aquifer - PI #008809; Subject Item ID 167476



Attachment B
Ground Water Monitoring Plan for
Ground Water Remedial Action Permit

Case Information:

Preferred ID:	008809
RAP Number:	RAP210001
Case Name:	Hudson County Chromate 117 – Shallow Ground Water
Address:	440 Route 440
City:	Jersey City
County:	Hudson County

Monitoring Schedule:

Well to be sampled	Type of Well	Easting	Northing	Sampling Schedule	Reporting Schedule	Sampling parameters for each well
117-MW-A05	Plume fringe	604116.02	684005.4	Biennially	Biennially	Chromium (Total)
117-MW-A14	Plume fringe	603651.33	683698.66	Biennially	Biennially	Chromium (Total)
117-MW-A85	Plume sampling point	603558.09	684201.19	Biennially	Biennially	Chromium (Total)
117-MW-A89	Sentinel	603352.69	683955.18	Biennially	Biennially	Chromium (Total)
117-MW-A99	Plume sampling point	603761.91	684664.22	Biennially	Biennially	Chromium (Total)
117-MW-A05	Plume fringe	604116.02	684005.4	Biennially	Biennially	Chromium (Hexavalent)
117-MW-A14	Plume fringe	603651.33	683698.66	Biennially	Biennially	Chromium (Hexavalent)
117-MW-A85	Plume	603558.09	684201.19	Biennially	Biennially	Chromium (Hexavalent)
117-MW-A89	Sentinel	603352.69	683955.18	Biennially	Biennially	Chromium (Hexavalent)
117-MW-A99	Plume sampling point	603761.91	684664.22	Biennially	Biennially	Chromium (Hexavalent)
117-MW-A05	Plume fringe	604116.02	684005.4	Quarterly	Biennially	Depth to Water Table from Top of Inner Well Casing (ft)
117-MW-A14	Plume fringe	603651.33	683698.66	Quarterly	Biennially	Depth to Water Table from Top of Inner Well Casing (ft)
117-MW-A85	Plume sampling point	603558.09	684201.19	Quarterly	Biennially	Depth to Water Table from Top of Inner Well Casing (ft)
117-MW-A89	Sentinel	603352.69	683955.18	Quarterly	Biennially	Depth to Water Table from Top of Inner Well Casing (ft)
117-MW-A99	Plume sampling point	603761.91	684664.22	Quarterly	Biennially	Depth to Water Table from Top of Inner Well Casing (ft)

117-MW-I4S	Plume sampling point	603839.6	684702.8	Every 5 Years	Subsequent Biennial Certification	Chromium (Total)
117-MW-I4S	Plume sampling point	603839.6	684702.8	Every 5 years	Subsequent Biennial Certification	Chromium (Hexavalent)
117-MW-I4S	Plume sampling point	603839.6	684702.8	Quarterly	Biennially	Depth to Water Table from Top of Inner Well Casing (ft)

Note: Depth to water table measurements should be collected at all monitoring wells in the Ground Water Monitoring Plan during each ground water sampling event, and contour maps generated and provided with each Ground Water Remedial Action Protectiveness/Biennial Certification Form due for the site.

State of New Jersey

PHILIP D. MURPHY
Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION

CATHERINE R. McCABE
Commissioner

SHEILA Y. OLIVER
Lt. Governor

Site Remediation and Waste Management Program
Remediation Review Element
Bureau of Remedial Action Permitting
401 E. State Street
P.O. Box 420
Mail Code 401-05S
Trenton, NJ 08625-0420
Phone: (609) 984-2990

August 14, 2018

Maria Kaouris
Remediation Manager
Honeywell International, Inc.
115 Tabor Road
Morris Plains, NJ 07950

RE: Ground Water Remedial Action Permit
Site: Hudson County Chromate 153
A/K/A: Study Area 5 Site 153/ Former Morris Canal
Address: 425/455 Route 440
City: Jersey City
County: Hudson
SRP Program Interest #: G000008767
Ground Water Remedial Action Permit #: RAP180001

Dear Ms. Kaouris:

Enclosed is a Ground Water Remedial Action Permit issued pursuant to the Site Remediation Reform Act, 58:10C-1 et seq. and the Administrative Requirements for the Remediation of Contaminated Sites at N.J.A.C. 7:26C-1 et seq. This permit becomes effective on August 21, 2018. Please note the referenced permit and program interest numbers and refer to them when corresponding with the Department.

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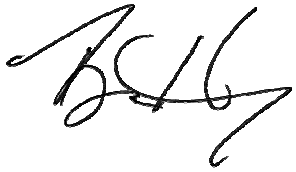
Please be aware that there are annual fees associated with this permit in accordance with N.J.A.C. 7:26C-4.6. These annual permit fees will be handled by invoicing the fee billing contact we have on record:

Maria Kaouris
Remediation Manager
Honeywell International, Inc.
115 Tabor Road
Morris Plains, NJ 07950
Phone: (973) 455-3302
Email: maria.kaouris@honeywell.com

Any changes to this contact should be brought to the Department's attention. Changes to fee billing contacts are updates and are not considered modifications to the permit.

The Department looks forward to future continued cooperation in working together to provide a healthy environment for the citizens of New Jersey and to protect its resources. Going forward, questions or comments regarding this permit should be addressed to the Bureau of Remedial Action Permitting at 609-984-2990, attention Robert Soboleski, Bureau Chief.

Sincerely,



William S. Hose, Assistant Director
Remediation Review Element

Enclosure

c: Municipal Clerk, Jersey City
rbyrne@jcnj.org

Jersey City Division of Health
smithv@jcnj.org

Hudson County Register
lsenerchia@hcnj.us

Hudson County Regional Health Commission
cnawrocki@hudsonregionalhealth.org

Dennis Nagg
Dennis.nagg@woodplc.com

New Jersey Department of Environmental Protection

Bureau of Remedial Action Permitting
401 East State Street
P.O. Box 420
Mail Code 401-05S
Trenton, NJ 08625-0420
Phone #: 609-984-2990

GROUND WATER REMEDIAL ACTION PERMIT
Monitored Natural Attenuation

The New Jersey Department of Environmental Protection hereby grants you a Remedial Action Permit pursuant to N.J.S.A. 58:10C-1 et seq. and N.J.A.C. 7:26C-1 et seq. for the facility/activity named in this document. This permit is the regulatory mechanism used by the Department to help ensure your remedial action will be protective of human health and the environment.

This permit establishes the monitoring, maintenance, and evaluation requirements for determining the effectiveness of an on-going ground water remediation. The monitoring program for this site shall be consistent with the attached Ground Water Monitoring Plan. A Classification Exception Area/Well Restriction Area (CEA/WRA) has been established for the site and is consistent with the attached CEA/WRA Fact Sheet.

Site: **Hudson County Chromate 153**
A/K/A: **Study Area 5 Site 153/ Former Morris Canal**

Facility Address: **425/445 Route 440** **Jersey City, NJ 07300** **Hudson County** **Block: 21902 Lot: 1**	**Program Interest#: G000008767** **Permit#: RAP180001**
Person Responsible for Conducting the Remediation - Co-Permittee: **Maria Kaouris** **Remediation Manager** **HONEYWELL INTERNATIONAL INC** **115 Tabor Road** **Morris Plains, NJ 07950** **Phone: (973) 455-3302** **Email: maria.kaouris@honeywell.com**	
Property Owner - Co-Permittee: **Same as above**	

Issuance Date:
08/14/2018

Effective Date:
08/21/2018

I. Authority

The Department is issuing this permit in accordance with N.J.S.A. 58:10C-1 et seq. and N.J.A.C. 7:26C-1et seq.

II. Permit Requirements

A. GROUND WATER MONITORING REPORTING AND REQUIREMENTS

1. Reporting Requirements

a. The permittee shall submit a monitoring report in accordance with the schedule in the attached Ground Water Monitoring Plan. Submit the monitoring report with the Remedial Action Protectiveness/Biennial Certification Form biennially from the effective date of this permit. [N.J.A.C. 7:26C- 7.9(a)]

b. The permittee shall ensure compliance with the requirements of the Ground Water Remedial Action Permit. This includes but is not limited to site inspections, ground water sampling, biennial submission of a Ground Water Remedial Action Protectiveness/Biennial Certification Form and Report, responding to any activities involving the institutional and/or engineering controls at the site, and responding to any public inquiries regarding the current status of the site. [N.J.A.C. 7:26C- 2.3(a and b)]

2. Sampling and Analysis

a. Sampling is to occur according to the applicable method(s) obtained from the Field Sampling Procedures Manual (the sampling method is noted in the site-specific Quality Assurance Performance Plan). [N.J.A.C. 7:26E- 2.1]

b. Samples are to be analyzed for the parameters listed in the attached Ground Water Monitoring Plan using the method or most recent revision of the method noted in the site-specific Quality Assurance Performance Plan. The method chosen must have adequate sensitivity to meet all applicable remediation standards/screening levels. The permittee shall collect and analyze samples pursuant to the attached Ground Water Monitoring Plan. [N.J.A.C. 7:26E-2.1]

B. REMEDIAL ACTION PROTECTIVENESS/BIENNIAL CERTIFICATION FORM

1. Reporting Requirements

a. The permittee shall prepare and submit to the Department a Remedial Action Protectiveness/Biennial Certification Form every two years following the anniversary of the date of the effective date of this permit. The certification shall be submitted on the required form provided by the Department. Submit a Remedial Action Protectiveness/Biennial Certification Form biennially from the effective date of this permit. [N.J.A.C. 7:26C- 7.7(a)1]

2. Evaluation Requirements

a. The permittee shall certify, as required in this permit, that the remedial action continues to be protective of the public health and safety and the environment. [N.J.A.C. 7:26C- 1.5(a)2]

b. The permittee shall conduct the remediation in accordance with all applicable statutes, rules, and guidance. [N.J.A.C. 7:26C- 1.2(a)]

c. The Remedial Action Protectiveness/Biennial Certification Form shall include a comparison of the laws, Ground Water Quality Standards, and other regulations applicable at the time the Department established the ground water classification exception area, with any relevant subsequently promulgated or modified laws or regulations to determine whether the classification exception area remains protective. The results shall be provided in table format, comparing of applicable laws, regulations, and standards. [N.J.A.C. 7:26C- 7.9(b)2]

d. The Remedial Action Protectiveness/Biennial Certification Form shall include an evaluation of whether there are any planned changes within a 25-year water use planning horizon for the aquifer(s) in which the ground water classification exception area is located since the Department established the ground water classification exception area or the last completed biennial review, whichever is more recent. [N.J.A.C. 7:26C- 7.9(b)3]

e. The Remedial Action Protectiveness/Biennial Certification Form shall include an evaluation of whether there have been any actual changes in the ground water use since the Department established the ground water classification exception area or the last completed biennial review. The results of the evaluation of the changes in ground water use include a scaled map identifying all wells and/or waterlines found within one mile from any part of the boundaries of the ground water classification exception area. [N.J.A.C. 7:26C- 7.9(b)4]

f. The permittee shall maintain a maintenance and evaluation log for each monitoring well used to establish the ground water classification exception area. The log shall include a description of any well damage or vandalism identified or repairs completed. If any of the damage resulted in the decommissioning of a well, provide a copy of the Well Abandonment Report. [N.J.A.C. 7:26C- 7.9(b)5]

g. The Remedial Action Protectiveness/Biennial Certification Form shall include an evaluation of any land use disturbance that may intercept the water table within the area of the ground water classification exception area that could result in a contaminated discharge to surface water. If any such disturbances are identified, sample the ground water/surface water downgradient and proximate to the land use disturbance to determine whether the ground water meets the more stringent of either: (1) The New Jersey Surface Water Quality Standards, N.J.A.C. 7:9B; or (2) The Federal Surface Water Quality Criteria, 40 CFR Part 131. [N.J.A.C. 7:26C- 7.9(b)6]

h. The Remedial Action Protectiveness/Biennial Certification Form shall include an evaluation of the fate and transport of the ground water contamination plume, including any additional remediation conducted, modification of the remedial action, or proposed revision of the ground water classification exception area, and apply for a modification of the Ground Water Remedial Action Permit to ensure that the remedial action remains protective of the public health and safety and the environment. [N.J.A.C. 7:26C- 7.9(b)7i and (d)2]

i. Within 180 calendar days after the anticipated expiration date of the ground water classification exception area, the permittee shall collect at least two rounds of ground water samples such that the time between sampling events accounts for seasonal fluctuations in the ground water table and the number of ground water samples collected is representative of the entire horizontal and vertical extent of the ground water classification exception area. If ground water samples indicate that contaminant concentrations have decreased to or below the applicable ground water quality standards throughout the ground water classification ex-

ception area, then the permittee may request that the Department remove the ground water classification exception area pursuant to N.J.A.C. 7:26C-7.3(g) and terminate the Ground Water Remedial Action Permit pursuant to N.J.A.C. 7:26C-7.13. If ground water samples indicate that contaminant concentrations have not decreased to or below the applicable ground water quality standards throughout the ground water classification exception area, then the permittee shall modify the remedial action by re-modeling the fate and transport of the ground water contaminant plume, proposing a revision to the ground water classification exception area, and applying for a modification of the Ground Water Remedial Action Permit pursuant to N.J.A.C. 7:26C-7.12. [N.J.A.C. 7:26C- 7.9(f)]

C. FINANCIAL ASSURANCE REQUIREMENTS

1. No Engineering Control

a. Financial Assurance is not required since an engineering control is not in place for this site. [N.J.A.C. 7:26C- 7.10]

D. FEES

1. For each year hereafter on the anniversary of the effective date of this permit, the Department shall invoice the permittees the amount of the annual Remedial Action Permit Fee. [N.J.A.C. 7:26C- 4.6]

E. PERMIT TRANSFERS

1. The permittee shall, at least 60 days prior to the sale or transfer of the property, or transfer of the operation of the property, or termination of a lease, submit a Remedial Action Permit Transfer/Change of Ownership Application and pay the permit transfer fee to the Department. [N.J.A.C. 7:26C- 7.11(b)]

F. PERMIT MODIFICATIONS

1. Ground Water Permit Modifications

a. The permittee shall apply to have the Department modify a Remedial Action Permit within 30 days after a statement that the permittee has completed a protectiveness evaluation required in its permit and has determined that the remedial action is not adequately protective of the public health and safety and of the environment, and stating the reasons for coming to this conclusion. [N.J.A.C. 7:26C- 7.12(b)1]

b. The permittee shall apply to have the Department modify a Remedial Action Permit within 30 days after the size, duration, or contaminants of a classification exception area need to be modified. [N.J.A.C. 7:26C- 7.12(b)2]

c. The permittee shall apply to have the Department modify a Remedial Action Permit within 30 days after the person responsible for conducting the remediation modifies the remedial action. [N.J.A.C. 7:26C- 7.12(b)4]

d. The permittee shall apply to have the Department modify a Remedial Action Permit within 30 days after the permittee changes its address. [N.J.A.C. 7:26C- 7.12(b)6]

G. PERMIT TERMINATIONS

1. A request for a permit termination can be filed by submitting a Remedial Action Permit Application to terminate the permit to the Department when the remedial action meets all applicable remediation standards without the need for the Remedial Action Permit and the remedial action is protective of the public health and safety and of the environment without the presence of the Remedial Action Permit. [N.J.A.C. 7:26C- 7.13]

H. FORM SUBMITTAL

1. Any forms, applications or documents required by this chapter that can be submitted in an electronic format shall be submitted electronically 90 days after the date that the Department informs the public in the New Jersey Register that the relevant electronic application is functional. [N.J.A.C. 7:26C- 1.6(c)]

2. All submissions required pursuant to this permit shall be made on forms approved and available from the Department. These forms and instructions for completing these forms can be found at http://www.nj.gov/dep/srp/srra/forms. [N.J.A.C. 7:26C- 1.6]

III. Permit Schedule

Permit Effective Date: 08/21/2018	
Submission Requirement	**Due Date**
Submit a Remedial Action Protectiveness/Biennial Certification Form	08/21/2020
Submit a Remedial Action Protectiveness/Biennial Certification Form	08/21/2022
Submit a Remedial Action Protectiveness/Biennial Certification Form	08/21/2024
Submit a Remedial Action Protectiveness/Biennial Certification Form	08/21/2026
Submit a Remedial Action Protectiveness/Biennial Certification Form	08/21/2028
Submit a Remedial Action Protectiveness/Biennial Certification Form	08/21/2030
Submit a Remedial Action Protectiveness/Biennial Certification Form	08/21/2032
Submit a Remedial Action Protectiveness/Biennial Certification Form	08/21/2034
Submit a Remedial Action Protectiveness/Biennial Certification Form	08/21/2036
Submit a Remedial Action Protectiveness/Biennial Certification Form	08/21/2038
Submit a Remedial Action Protectiveness/Biennial Certification Form	08/21/2040
Submit a Remedial Action Protectiveness/Biennial Certification Form	08/21/2042
Submit a Remedial Action Protectiveness/Biennial Certification Form	08/21/2044
Submit a Remedial Action Protectiveness/Biennial Certification Form	08/21/2046
Submit a Remedial Action Protectiveness/Biennial Certification Form	08/21/2048

Note: Remedial Action Protectiveness/Biennial Certification Forms are required to be submitted according to the schedule, and shall continue to be submitted until the Permit is terminated or modified.

Your Ground Water Remedial Action Permit under Administrative Requirements for the Remediation of Contaminated Sites, N.J.A.C. 7:26C-1 et seq. has been approved by the New Jersey Department of Environmental Protection.

Sincerely,



Date: August 14, 2018

William S. Hose, Assistant Director
Remediation Review Element

IV. Attachments:

A. CEA/WRA Fact Sheet
B. Ground Water Monitoring Plan

CEA ID: CEA1455512
Block: 21902 Lot: 1

Attachment A
Classification Exception Area/Well Restriction Area Fact Sheet

Case Information:

Preferred Id:	G000008767
RAP Number:	RAP180001
Case Name:	Hudson County Chromate 153 (Former Morris Canal)
Address:	425/445 Route 440 Jersey City
County:	Hudson

--- Site Location: Refer to Exhibit A ---

Block and Lot of the CEA:

Subject Item	***Block***	***Lot***	***Municipality***	***Off-Site***
CEA101455512	21902	1	Jersey City	No

Facility Contacts:

Co-Permittees: **Person Responsible for Conducting the Remediation:**	Maria Kaouris Remediation Manager Honeywell International, Inc. 115 Tabor Road Morris Plains, NJ 07950 Phone: (973) 455-3302 Email: maria.kaouris@honeywell.com
Property Owner:	Same as above

CEA Information:

Subject Item	***Description***
CEA101455512	Chrome plume

Subject Item	***Affected Aquifer***	***Vertical Depth***
CEA101455512	Fill	15
CEA101455512	Lockatong	50

Subject Item	***Classification***
CEA101455512	II-A

Contaminants:

This CEA/WRA applies only to the contaminants listed in the table below. All constituents standards (N.J.A.C. 7:9C-1.6) apply at the designated boundary.

Subject Item	***Contaminant***	***Concentration (1)***	***GWQS (2)***
CEA101455512	Chromium	19,100 micrograms per liter	70 micrograms per liter
CEA101455512	Chromium (VI)	16,100 micrograms Per liter	70 micrograms per liter

Note: *(1)* Maximum concentration detected at the time of CEA establishment
(2) Ground Water Quality Standards

--- CEA Boundaries: Refer to Exhibit B ---

Projected Term of CEA:

Subject Item	***Date Established***
CEA101455512	02/16/2012

Subject Item	***Duration in Years***
CEA101455512	Indeterminate

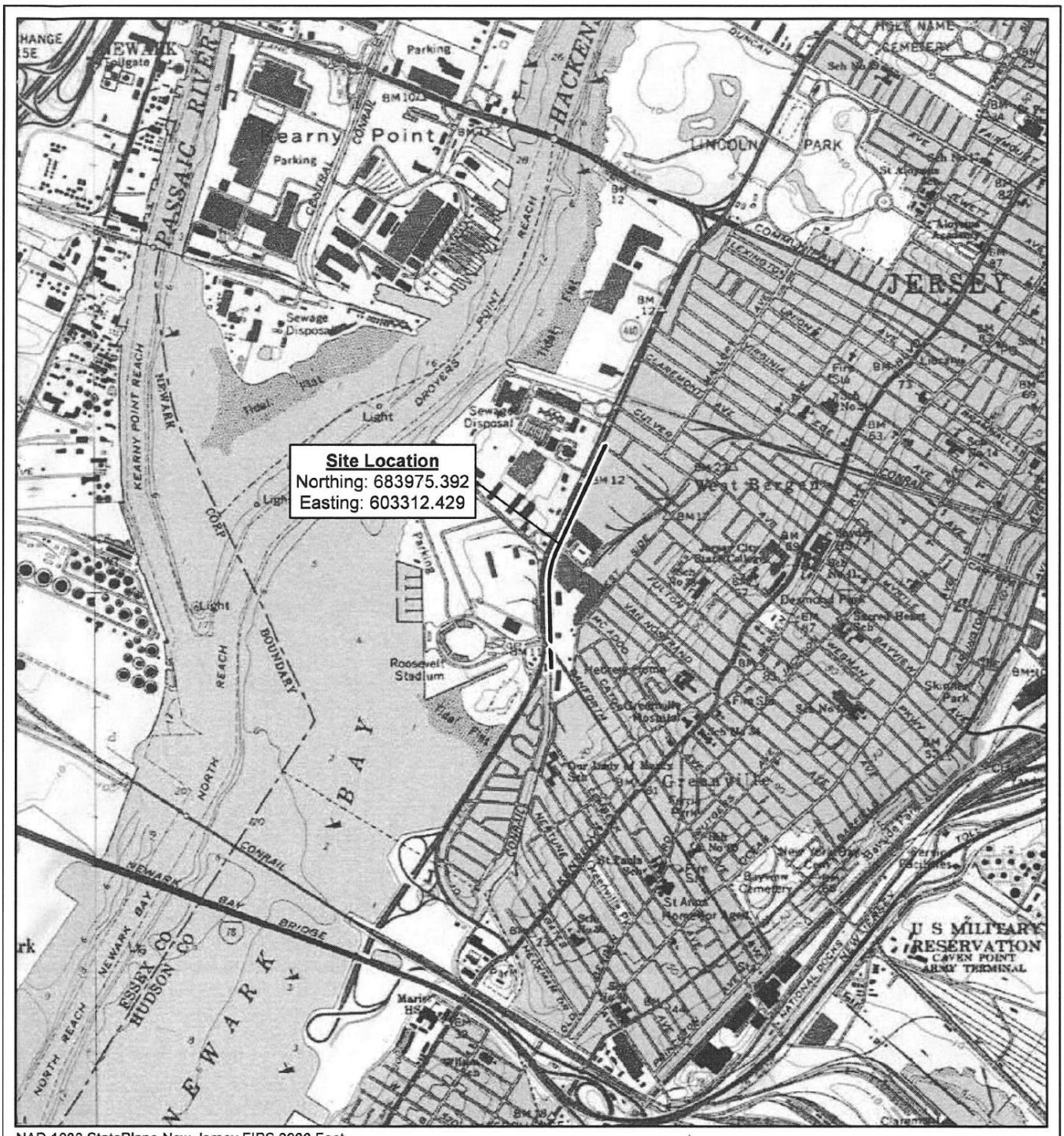
Subject Item	***Expected Expiration Date***
CEA101455512	Indeterminate

Note: Since ground water quality data indicates exceedance of contaminants above the Primary Drinking Water Standards, and the designated uses of Class II-A aquifers include potable use, the CEA established for this site is also a Well Restriction Area. The extent of the Well Restriction Area shall coincide with the boundaries of the CEA.

Well Restrictions set within the boundaries of the CEA

Subject Item	***Restriction***
CEA101455512	Double Case Wells: With the exception of monitoring wells installed into the first water bearing zone, any proposed well to be installed within the CEA/WRA boundary shall be double cased to an appropriate depth in order to prevent any vertical contaminant migration pathways. This depth is either into a confining layer or 50 feet below the vertical extent of the CEA.
CEA101455512	Evaluate Production Wells: Any proposed high capacity production wells in the immediate vicinity of the CEA/WRA should be pre-evaluated to determine if pumping from these wells would draw a portion of the contaminant plume into the cone of capture of the production wells or alter the configuration of the contaminant plume.
CEA101455512	Sample Potable Wells: Any potable well to be installed within the footprint of the CEA/WRA shall be sampled annually for the parameters of concern. The first sample shall be collected prior to using the well.

Exhibit A (Site Location Map)



Legend

Site Boundary

Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed

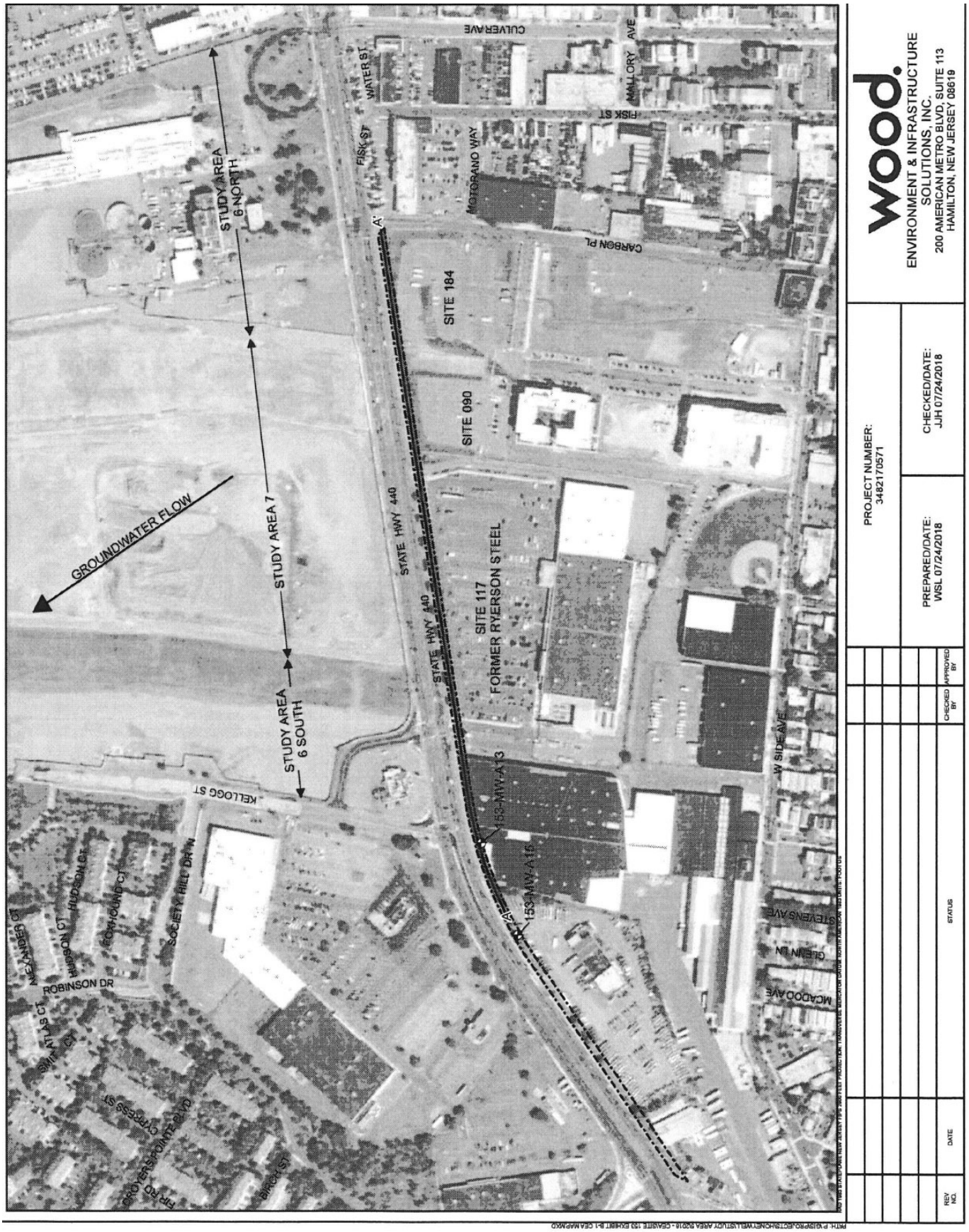
amec

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	

Exhibit B (CEA Boundaries)



wood.
ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

PROJECT NUMBER: 34821705?1

PREPARED/DATE: WSL 07/24/2018

CHECKED/DATE: JJH 07/24/2018

REV NO.	DATE	STATUS	CHECKED BY	APPROVED BY

PATH: P:\GIS\PROJECTS\HONEYWELL\STUDY AREA 6\2018 - CEA\SITE 153 EXHIBIT B-1 CEA MAP.MXD

Attachment B
Ground Water Monitoring Plan for
Ground Water Remedial Action Permit

Case Information:

Preferred ID:	G000008767
RAP Number:	RAP180001
Case Name:	Hudson County Chromate 153
Address:	Rte 440
City:	Jersey City
County:	Hudson County
Block and Lot of the Site:	Block: 21902 Lot: 1 (main parcel) Block: 26704 Lot: 5 (small parcel)

Monitoring Schedule:

Well to be sampled	Type of Well	Easting	Northing	Sampling Schedule	Reporting Schedule	Sampling parameters for each well
153-MW-A13	Plume fringe	603210.92	683671.001	Biennially	Biennially	Chromium (Total)
153-MW-A15	Sentinel	603149.27	683365.894	Biennially	Biennially	Chromium (Total)
153-MW-A13	Plume fringe	603210.92	683671.001	Biennially	Biennially	Chromium (Hexavalent)
153-MW-A15	Sentinel	603149.27	683365.894	Biennially	Biennially	Chromium (Hexavalent)
153-MW-A13	Plume fringe	603210.92	683671.001	Yearly	Biennially	Depth to Water Table from Top of Inner Well Casing (ft)
153-MW-A15	Sentinel	603149.27	683365.894	Yearly	Biennially	Depth to Water Table from Top of Inner Well Casing (ft)

WORKER PROTECTION PLAN

STUDY AREA 5
NJDEP SITE 117
FORMER RYERSON STEEL SITE

JERSEY CITY, NEW JERSEY

Prepared for

Honeywell

115 Tabor Road
Morris Plains, New Jersey 07950

Prepared by:

wood.

Wood Environment & Infrastructure Solutions, Inc.
200 American Metro Boulevard, Suite 113
Hamilton, New Jersey 08619

JUNE 2018

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TABLE

Table 1 Summary of Worker Training Requirements

APPENDICES

Appendix A: Site Maps
A-1: Site Location Map
A-2: Restricted Areas and Engineering Control Map
A-3: Engineering Control Diagram
A-4: Membrane Grading Plan/Typical Cross-Sections & Details

Appendix B: Fact Sheets: Chromium Information and Potential Health Hazards

Appendix C: Cap/Liner Reference Information and Specifications
(Reference: Remedial Action Report; February 1998)

Appendix D: Deed Notices
D-1: Deed Notice for Main Site (Block 26201, Lot 1.01)
D-2: Deed Notice for Wedge Parcel (Block 26101, Lot 1.02)

Appendix E: Subsurface Work Authorization Form/Dig Permit

1.0 PURPOSE AND SCOPE

This document presents a Worker Protection Plan (Plan) for the former Ryerson Steel Site (referred to by the NJDEP as Site No. 117), located in Jersey City, New Jersey, as required by the Site 117 Deed Notice. Remedial actions completed at the Site included installation of engineering controls (multi-layered capping system beneath surface pavement) and establishment of institutional controls (deed notice). Significant portions of the Site contain sub-surface hazardous chromium ore processing residue (COPR) historically used as fill material, and/or chromium-impacted soils or groundwater located beneath the cap materials.

It is essential that all existing and future engineering controls (e.g. capping systems) are not adversely affected by any subsurface intrusive work that may be performed so that they continue to be protective of human health and the environment. Institutional controls (e.g., deed notices and groundwater Classification Exception Areas) are in place to communicate the presence of engineering controls and chromium-impacted soils and groundwater. Deed notice documents contain specific requirements pertaining to notification, disturbance and repair of engineering controls. Deed notices are included for reference as Appendix D.

This Plan was prepared by Wood Environment & Infrastructure Solutions, Inc. (formerly Amec Foster Wheeler) on behalf of Honeywell for use by the Site owner and/or operators and their contractors for the protection of the site engineering controls and the workers who may be potentially exposed to COPR, chromium-impacted soils or groundwater in conjunction with any ground intrusive work performed at the site. This Plan identifies health and safety requirements for the protection of site workers and contractors who may perform ground intrusive activities (e.g., digging, drilling, excavation) that may disturb existing engineering controls, provides a basis for worker awareness to inform workers of potential hazards associated with chromium-impacted media, and addresses coordination of work with Honeywell.

Honeywell has also entered into a contract with Terradex Inc. to notify Honeywell through the New Jersey One Call system whenever soil disturbing work takes place at the Site. Notice through the Terradex LandWatch system will enable Honeywell to work with entities doing subsurface work and inform them of the processes

described in this Worker Protection Plan. Honeywell will continue to use the Terradex LandWatch system to receive notification of any subsurface activities on the Site, provided Terradex is willing and able to provide this service in a cost effective manner, and provided Terradex is able to provide this service consistent with the requirements of New Jersey law.

This Plan is organized into the following sections:

Section 1 – Purpose and Scope: identifies the purpose and scope of the Plan.

Section 2 – Site Background: presents background information including previous investigations, remedial actions, engineering and institutional controls.

Section 3– Coordination of Work: addresses coordination of work between the Site owner/operators and Honeywell, including oversight; handling, removal and disposal of chromium-impacted materials; and restoration of the engineering controls in connection with any ground intrusive activities that could cause contact with chromium-impacted media.

Section 4 – Hazard Evaluation: provides general information on potential health hazards associated with chromium.

Section 5 – Health and Safety Requirements: identifies applicable health and safety requirements for workers.

2.0 SITE BACKGROUND

This section provides background information for Site 117 Former Ryerson Steel. Site 117 is part of Study Area 5 which includes five sites located on the east side of Route 440 in Jersey City.

The Site is located along Route 440 on the west side of the City of Jersey City. Site figures are provided in **Appendix A**. The Site property is designated as Block 26101, Lots 1.01 and 1.02 (formerly Block 1285.5, Lot 1). The majority of the Site property (Lot 1.01) is owned by Jersey City Fields, LLC, and is occupied by commercial retail facilities including The Home Depot and Raymour & Flanigan Furniture (referred to herein as "the main Site"). A small portion of the Site property (Lot 1.02) is owned by Bayfront Redevelopment, LLC, a Honeywell affiliate, and serves as the location of a groundwater treatment filter station structure for the remedial actions completed on adjacent Sites 90/184 (Baldwin Steel/M.I. Holdings; New Jersey City University [NJCU] property. This small lot is also referred to as the wedge parcel and includes easements for an access road to the retail facility and for future ingress/egress and utilities associated with the NJCU redevelopment project.

The current use of the main Site as a commercial/retail facility and of the wedge parcel as a groundwater treatment station facility and access road is expected to continue for the foreseeable future. The Site property encompasses approximately 15 acres and is bounded on the north by Site 090 (former Baldwin Steel; currently occupied by New Jersey City University), on the east by commercial and municipal properties, on the south by a commercial facility, and on the west by Site 153 (Former Morris Canal) and Route 440.

The Site was the location of the former Mutual Chemical Company sodium dichromate production facility from approximately 1905 to 1954, and then was used for steel production by Ryerson Steel. The buildings related to former chemical and steel production were demolished. The entire Site was capped in accordance with an NJDEP-approved Remedial Action Work Plan (RAWP) as part of the Site redevelopment as a retail facility. Remedial actions were documented in a Remedial Action Report (RAR) dated February 1998, prepared by Enviro-Sciences, Inc.

Remedial Actions and Engineering Controls

Remedial actions were completed in 1997 and included excavation and offsite transportation and disposal of contaminated soils and installation of engineering controls (cap) over remaining contaminated soils. Engineering controls consist of a multi-layered cap system with geomembrane liner situated beneath existing pavement and landscaped areas. The capping system consists of the following components (from bottom to ground surface): geotextile protection fabric; 40-mil linear low density polyethylene (LLDPE) impervious geomembrane; geocomposite drainage material; and minimum 6 to 12 inches of clean fill material. Site surface features include asphalt or concrete over the majority of the site with some small landscaped areas. Information regarding the cap area and engineering controls are indicated on figures in **Appendix A**.

The reference figures in **Appendix A** include the membrane grading plan and cross-sections which may be used to estimate the depth of clean fill above the liner and information on liner placement in the area of structures and utilities. Information regarding the cap materials, liner specifications, and QA/QC information from the RAR is included for reference in **Appendix C**. Site maps indicating soil contaminant concentrations are included as Exhibit B to the Deed Notice attached in **Appendix D**.

Institutional Controls

Following completion of remedial actions, a deed notice was recorded for the Site on March 24, 1998. Following subdivision of the property into two separate parcels including the main Site (Lot 1.01) and small wedge parcel (Lot 1.02), the original deed notice was terminated and separate deed notices were recorded for the two parcels in 2015. As previously discussed, the subdivided wedge parcel serves as the location of a groundwater treatment filter station structure for the remedial actions completed on adjacent Sites 90/184 (NJCU property). The deed notices reflect current block and lot information and the NJDEP model deed notice format specified in the NJDEP Administrative Requirements for the Remediation of Contaminated Sites issued in May 2012.

Post-remediation cap inspections are conducted by Honeywell on a quarterly basis and protectiveness certification reports are submitted to the NJDEP every two years. The purpose of the deed notices is to communicate the presence of contaminated soils and prevent unauthorized disturbance of engineering controls. The deed notice specifies requirements for notification to the NJDEP and to

Honeywell prior to any alteration, improvement, and/or disturbance of engineering controls, as well as monitoring and reporting requirements. Refer to the deed notices for details regarding monitoring, maintenance, notification and reporting requirements. Copies of the deed notices for the main site and subdivided wedge property are included in Appendices D-1 and D-2, respectively.

An institutional control for groundwater in the form of a Classification Exception Area (CEA) was established by the NJDEP for Study Area 5 (which includes Site 117 and other sites) and Study Areas 6 and 7 (located on the west side of Route 440) to address chromium in groundwater above the NJDEP groundwater quality standards. A CEA is required where residual groundwater contaminants may remain at concentrations above the NJDEP groundwater quality standards to communicate the presence of, and prevent the use of contaminated groundwater.

Remedial Action Permits

The NJDEP issued Remedial Action Soil Permits for the main site (Lot 1.01) and the wedge parcel (Lot 1.02) on December 27, 2017. The permits specify long term requirements for maintenance, monitoring, and reporting regarding the effectiveness of the engineering and institutional controls.

Subsurface Work Authorization Form/Digging and Excavation Permits

Completion of a Subsurface Work Authorization Form/Digging and Excavation Permit ("Dig Permit Form") checklist is required prior to any subsurface work that may disturb the engineering controls (cap). The Dig Permit Form is intended to facilitate coordination of work by the Site owner and/or operator with Honeywell prior to conducting utility work or any other subsurface work that may potentially disturb the engineering controls. The Dig Permit Form is provided in **Appendix E**.

3.0 COORDINATION OF WORK

Prior to performing subsurface work at the Site, any entity conducting such work, including the Site owner (Jersey City Fields, LLC), operators/tenants and/or their contractors, must notify Honeywell and provide information regarding the work location and nature of disturbance (i.e., area and depth of disturbance, timing of work). This information will enable coordination of work, establishing requirements for worker protection, handling and disposal of chromium-impacted media, and repair and restoration of engineering controls. Deed notice requirements also specify notification to Honeywell and the NJDEP prior to any activities that will involve the disturbance of engineering controls.

A Subsurface Work Authorization Form ("Dig Permit") has been developed to facilitate coordination of work (**Appendix E**). Use of the dig permit is required for all planned subsurface work at the Site.

Honeywell has also established a telephone notification and response system for use by any entity conducting subsurface work, to notify Honeywell of any work activities planned or required on an emergency basis that may disturb the engineering controls. The notification and response system facilitates coordination of activities between Honeywell and other parties with respect to handling and disposal of chromium-contaminated media that may be generated during work.

The notification system includes a telephone answering service (referred to as the Chromium Response Hotline: **855-727-2658**); this number is also included in Deed Notice documents for providing notification to Honeywell prior to disturbance of engineering controls.

All parties including Site owner/operators/tenants or their contractors who plan to perform any ground intrusive work above the engineering controls must notify and consult with Honeywell in order to (1) determine what level of worker protection is appropriate, (2) determine if proposed work activities comply with or are applicable to the deed notice requirements, and (3) to coordinate on-site oversight by Honeywell or its representative of any ground intrusive work above the engineering controls.

This Worker Protection Plan must be used by Site owner/operators/tenants to protect their employees or contractors. Trained personnel must perform ground

intrusive work based on the requirements indicated in Section 5 and summarized on **Table 1**.

Honeywell or its representative must be on-site to observe ground intrusive work that may impact the engineering controls and will provide technical assistance and field support as needed, i.e., to document that the engineering controls are not disturbed and that appropriate precautions and safety measures are taken in the event that the engineering controls are disturbed.

Honeywell, on an annual basis, will provide written communication to Jersey City Fields, LLC regarding the following:

- Request that Jersey Fields, LLC communicate with Site operators/tenants regarding the requirements of the Deed Notice and Worker Protection Plan; and
- Honeywell availability to provide briefing or training to Site operators and/or tenants regarding awareness of the chromium remedy and the requirements of the Deed Notice, Worker Protection Plan.

The above communication will be in the form of electronic mail correspondence or letter to be done annually by January 31.

3.1 COORDINATION OF WORK BETWEEN HONEYWELL AND SITE OWNER AND/OR OPERATOR/TENANT

The following steps summarize procedures for coordination of work between Honeywell and the Site owner and/or operator/tenant for performing subsurface work at the Site.

1. Site owner/operator/tenant identifies work project involving intrusive activities above the engineering controls (cap materials).
2. Site owner/operator/tenant notifies Honeywell of the planned work location and depth and the estimated schedule/timing for completion of work, and initiates completion of Dig Permit.
3. Honeywell (or its designated contractor) reviews the scope of work and makes a determination, in consultation with the Site owner/operator/tenant, regarding requirements pertaining to deed notice disturbance, health and

safety requirements including the need for 40-hour HAZWOPER trained workers, and any necessary repair/restoration of engineering controls. If the work is confirmed to involve disturbance of engineering controls and potential exposure to chromium contaminated media, then Honeywell coordinates with the Site owner/operator/tenant and the contractor performing the work regarding on-site observation of the work by Honeywell or its representative. Honeywell will provide technical assistance and field support (to be determined in consultation with Site owner/operator/tenant). If Honeywell determines that the proposed work will not disturb engineering controls, then the Site owner/operator/tenant would proceed with work without further coordination with Honeywell. In such cases, Honeywell may elect to have its representative on-site to observe work and document there is no disturbance of the engineering controls (to be determined on a case by case basis).

4. If applicable, Honeywell or other appropriate party provides notification to the NJDEP, as required in accordance with deed notice requirements for disturbance of engineering controls (refer to the deed notice for notification requirements).

5. Honeywell (or its designated contractor) coordinates with the Site owner/operator/tenant and the contractor performing work as needed for performance of field work including the use of qualified contractors for excavation, handling and disposal of chromium-contaminated materials at a facility licensed to accept such materials, backfilling, and site restoration including repair/replacement of engineering controls. Honeywell (or its designated contractor) will provide technical assistance and field support as needed, to be determined in consultation with the Site owner/operator/tenant.

- Following completion of work, Honeywell or other applicable party prepares and submits a deed notice disturbance report with documentation of field work and restoration of engineering controls to the NJDEP (with copies provided to the Site owner/operator) for inclusion with the next biennial certification report in accordance with deed notice requirements, as applicable for disturbance of engineering controls.

3.2 COORDINATION OF WORK BETWEEN HONEYWELL AND OTHER PARTIES

This Worker Protection Plan applies to all subsurface work at the Site and may also be used by other parties who may perform subsurface work at the Site. Other parties may include, but are not limited to, JCMUA, PSE&G, Comcast, Verizon, NJDOT, other utilities and/or their contractors. Honeywell will undertake reasonable efforts to work with other parties to make them aware of this Worker Protection Plan and to urge them to use it to protect their workers. In most cases, this effort will consist of Honeywell's contractor reviewing key sections of this document with the crew in the field, prior to the crew starting any work. Honeywell may receive notification of work by other parties through the Chromium Response Hotline or the Terradex LandWatch system.

The following steps summarize procedures for coordination of work between Honeywell and other parties and/or their contractors for performing subsurface work in the area of Site:

1. Other party notifies Honeywell regarding work project (e.g., utility repair) by contacting the Chromium Response Hotline: **855-727-2658** or Honeywell is notified of work through the Terradex LandWatch system.
2. For notification of work through the Terradex LandWatch system, Honeywell will initiate telephone contact with third party contractors and follow-up with electronic mail notification within 24 hours. Honeywell will send electronic mail notification (A) below, advising the contractor of the nature of the chromium remedial measures (e.g., engineering controls) and the need for approval from Honeywell before proceeding with the soil disturbance (the electronic mail communication will include a copy of the annual utility notification letter); or if Honeywell is able to determine that the proposed work will not impact the remedial measures, Honeywell will send electronic mail notification (B) below, advising that no further review by Honeywell is needed. Text for email notification to third parties:

   (A) "**NOTICE:** Confirming our telephone conversation and based on the information provided, you have proposed actions that may disturb a contaminated site subject to a state court order and regulated by NJDEP. We request an on-site meeting with a representative of your firm to review the specific scope and location of the proposed work prior to disturbance."

or

(B) "**NOTICE:** Confirming our telephone conversation and based upon the information provided, the planned intrusive work is outside of the areas of known chromium-impacted soils. We do not require any additional coordination with Honeywell for this scope."

3. For emergency situations where subsurface work needs to be done within a short timeframe before a determination can be made on whether or not the work is in an area of chromium soils, the other party may proceed with work using properly trained contractors (i.e., OSHA 40-hour HAZWOPER training) and Honeywell will provide technical assistance and field support (to be determined in cooperation with the party). For non-emergency situations, Honeywell determines whether or not the proposed work location is within an area of chromium soils and provides confirmation to the party as described above. Honeywell, in consultation with the party performing work, completes the Dig Permit (**Appendix E**). If the work location is confirmed to be in an area of chromium soils, then Honeywell coordinates with the party regarding response and field work activities. If Honeywell determines that the proposed work is not in an area of chromium soils, then the party would proceed with work without further coordination with Honeywell.

4. Honeywell or the other party provides notification to the NJDEP, as required in accordance with Deed Notice requirements for disturbance of engineering controls (refer to the Deed Notice for notification requirements).

5. Honeywell coordinates with the party as needed for performance of field work including the use of qualified contractors for excavation of chromium-contaminated materials and disposal at a facility licensed to accept such materials, backfilling, and site restoration including repair/replacement of the engineering controls. Work coordination will also include arrangements as needed between the parties to observe or inspect cap repairs and site restoration work. Honeywell will observe any planned disturbance and restoration of the engineering controls. Honeywell (or its designated contractor) will provide technical assistance and field support as needed for documentation and reporting requirements and make arrangements for disposal of chromium contaminated materials.

6. Honeywell or other applicable party prepares and submits a deed notice disturbance report with documentation of field work and restoration of engineering controls to the NJDEP (with copies provided to the Site

owner/operator) for inclusion with the next biennial certification report in accordance with deed notice requirements, as applicable for disturbance of engineering controls.

4.0 HAZARD EVALUATION

This section provides information on chromium including health and safety information and general assessment of potential hazards and health and safety concerns for work on sites where COPR fill or chromium-impacted media such as soils or groundwater are present.

Chromium ore processing residue (COPR) is a by-product of the extraction process of chromium from its ore, which involves the roasting of chromite ore under highly alkaline conditions. COPR contains both hexavalent and trivalent chromium in a complex mineral matrix and may be caustic, i.e., highly alkaline with pH values typically greater than 11. COPR is typically a grayish-black colored granular material and may also be indicated by the presence of yellow to green colored grains or nodules, or hard layers of reddish brown material.

Potential chemical hazards associated with disturbance of remedial measures and engineering controls at the Site may include the presence of chromium and hexavalent chromium in fill soils and groundwater. Chromium-impacted soil (also referred to as "chromium soils") refers to soils containing hexavalent chromium above the NJDEP soil criteria, currently 20 milligrams per kilogram (mg/kg or parts per million [ppm]). Chromium-impacted groundwater refers to groundwater containing chromium above the NJDEP groundwater quality standards, currently 70 micrograms per liter (µg/L or parts per billion [ppb] based on total chromium).

Potential chemical exposure pathways include:

- Inhalation of airborne dusts and mists that may contain contaminated particulates
- Skin and eye contact and absorption due to direct contact with contaminated soil sediment, and/or liquids
- Incidental ingestion of contaminated soils, liquids, and/or particulates

Contact with known or suspected COPR-contaminated media must be avoided. Potential exposure to chromium contamination could occur by construction or utility workers performing ground intrusive activities (e.g., drilling, digging, excavation)

that would penetrate the cap materials. Only properly trained and equipped personnel should be allowed to perform tasks that may involve the disturbance of cap materials and handling of known or suspected contaminated media (i.e., OSHA 40-hour HAZWOPER training). Worker protection requirements are included in Section 5.

In the event of any inadvertent disturbance to the engineering controls, workers are advised to stop work, cover and secure the area using appropriate measures (e.g., plastic sheeting, traffic cones or barrier) and notify appropriate site management personnel (Jersey City Fields, LLC, facility operator, or other applicable party) and Honeywell. On-going work would then be coordinated with Honeywell with respect to the management of chromium-contaminated materials and repair/restoration of the Chromium Remedy (see Section 3 for coordination of work).

NOTE: The capping system at Site 117 includes a black colored geomembrane liner above chromium contaminated soils and minimum 6 to 12 inches of clean fill material above the liner. If the geomembrane liner is inadvertently encountered or disturbed, workers must stop work and notify their supervisor (also see Section 5).

The following fact sheets with information on chromium, potential health hazards, and precautions to prevent exposure are provided in **Appendix B:**

- Agency for Toxic Substance and Disease Registry (ATSDR) Fact Sheet on Chromium
- Occupational Safety and Health Administration (OSHA) Fact Sheet on Health Effects of Hexavalent Chromium
- New Jersey Department of Health and Senior Services (DHSS) Right to Know Hazardous Substance Fact Sheet

Additional information and studies regarding the potential health hazards of hexavalent chromium can be found at the Integrated Risk Information System (IRIS) U.S. Environmental Protection Agency, Chemical Assessment Summary National Center for Environmental Assessment, Chromium (VI) (available at https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0144_summary.pdf).

Other contaminants that may be associated with regional historic fill or other sources of contamination include polycyclic aromatic hydrocarbons (PAHs) and metals (e.g., arsenic, lead) unrelated to COPR fill. These other potential contaminants are not addressed in this Plan.

5.0 HEALTH AND SAFETY REQUIREMENTS

This section presents health and safety requirements and programs for site workers and contractors who may be potentially exposed to hazardous substances including hexavalent chromium. These programs include worker training, medical monitoring, respiratory protection, and hazard communication. Applicable regulations include Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements at 29 Code of Federal Regulations (CFR) Section 1926.65 and the Hexavalent Chromium Standard (29 CFR 1926.1126; Construction Industry Standard). A summary of worker training requirements for hazardous waste sites and hexavalent chromium is presented on **Table 1**.

The training requirements in this section apply to workers who could be exposed to chromium-contaminated materials and are to be addressed by the employer of the person performing the work. The worker training requirements in this section are applicable to subsurface work involving the disturbance or penetration of engineering controls (e.g., cap materials) and potential for exposure to contaminants. These requirements would not apply to work that does not involve potential exposure to contaminants, such as non-intrusive work or other limited near-surface work activities within clean fill that do not involve potential disturbance of the geomembrane liner and contact with contaminants. Note that the remedial actions included placement of clean fill (minimum 6 inches and typically 12 inches thick) above geomembrane liner prior to installation of surface cover features (asphalt or concrete). The engineering controls are described in Section 2 and are shown on figures in **Appendix A**.

Prior to work involving disturbance of engineering controls and potential exposure to contaminated soils, Honeywell must be notified as indicated in Section 3 to confirm requirements and coordinate removal and/or disposal of chromium soils. It is expected that worker protection requirements under this section would be incorporated into a Health and Safety Plan (HASP), to be prepared and implemented by the entity and/or their contractors performing the work under OSHA HAZWOPER requirements.

Site owner/operator personnel (e.g., Jersey City Fields, Home Depot, Raymour & Flanigan or other tenants) are not expected to conduct ground intrusive activities

(e.g., excavation, digging, drilling) that would involve disturbance of engineering controls and potential for exposure to chromium soils. It is expected that such activities (if required) would be implemented by contractors for the Site owner/operators/tenants who are knowledgeable about potential hazards and procedures to be followed when work is conducted in areas of engineering controls. Therefore, Site owner/operators/tenants or other applicable party responsible for conducting ground intrusive subsurface work are obligated to confirm that their personnel and contractors have appropriate training.

The following sections include, but are not necessarily limited to, current OSHA requirements expected to be applicable to work involving disturbance of engineering controls and potential for exposure to chromium-contaminated soils or groundwater. All parties conducting such work are responsible for complying with current OSHA requirements.

Personnel Training

- OSHA HAZWOPER training is required for field personnel whose job responsibilities cause them to be exposed or have the potential to be exposed to hazardous substances/wastes, in this case, hexavalent chromium. This applies to work involving disturbance of engineering controls at the subject site or work within the exclusion zone or regulated area for field work as defined in the site-specific Health and Safety Plan (HASP).
- Management and Supervisory Training is required for individuals who manage or supervise personnel engaged in hazardous waste operations.
- Training documentation is required to be maintained by the party conducting the field work. Field work supervisory personnel (i.e., health and safety officer) are responsible for checking training documentation to verify that workers have complete and current documentation.

Determination regarding use of OSHA HAZWOPER 40-hour trained workers will be made on project specific basis based on the nature of field work. It is expected that, in most cases, 40-hour trained workers will be required for any work that will involve disturbance of the geombembrane liner, and that 40-hour trained workers will not be required for work only anticipated to disturb clean soils above the liner. Refer to the site maps in Appendix A for details regarding engineering controls.

NOTE: If the geomembrane liner materials described above are encountered by workers who are not properly trained according to the requirements of this section, then stop work and notify supervisory personnel, who will then notify appropriate owner/operator management personnel and Honeywell.

Preparation of Site Health and Safety Plan

- Potential exposure to contaminants in the soil or groundwater would be addressed as part of a site-specific HASP, which would be prepared and implemented by contractors performing field work under OSHA HAZWOPER requirements.

Medical Monitoring

- Under the OSHA HAZWOPER standard, medical monitoring is required for workers performing field work onsite for more than 30 days per year and exposed to hazardous substances including hexavalent chromium above applicable exposure limits. Medical monitoring requirements would apply to most work situations involving disturbance of engineering controls and potential for exposure to chromium-contaminated soils, to be determined on a case by case basis by the entity performing field work. If required, medical monitoring is provided by the employer of the person performing field work.

Hazard Communication

- OSHA hazard communication requirements govern "hazardous substances" and exclude "hazardous waste." For hazardous waste site work, the OSHA Hazard Communication standard only applies to hazardous chemicals brought to the site (e.g., decontamination fluids), not to the contaminants in the soil or groundwater.
- The hazard communication program is required to be part of the Health and Safety Policy and Procedures Manual and be made available to employees for review. Hazard communication guidelines for compliance can be found at the following OSHA website: *http//www.osha.gov/dsg/hazcom/oshacomplianceassistance.html.*
- Containers of hazardous substances are required to be labeled as to the contents, appropriate hazard warning, and the name and address of the manufacturer. The name on the label must match the name on Material

Safety Data Sheets/Globally Harmonized System. Material Safety Data Sheets are obtained from the manufacturer when hazardous substances are purchased to conduct field work, and maintained at the work site for all hazardous substances to be used.

In addition to the above requirements to address work involving potential exposure to hexavalent chromium, there may be other applicable OSHA training requirements for contractors performing field work. Compliance with such requirements, as for example those pertaining to excavation activities under OSHA 29 CFR 1926.650, is the result of the type of activity undertaken rather than the presence of chromium, thus the Site owner/operator/tenants and their respective contractors must independently evaluate the need to comply with such requirements. All parties conducting work must check applicability and comply with current OSHA requirements.

TABLE 1

SUMMARY OF WORKER TRAINING REQUIREMENTS

TABLE 1: Summary of Worker Training Requirements
Hazardous Waste Sites and Hexavalent Chromium Standard

Type of Workers	Hexavalent Chromium Standard Awareness Training	40-Hour OSHA Hazwoper Training	24-Hour OSHA Hazwoper Training [1]	On The Job Training	8-hour refresher	8-hour Supervisory	Repiratory Protection	Medical Monitoring [2]	Hazard Communication [3]
Hands-On Site Workers (Site Owner, Operators and/or Contractors or Other Parties)	Required for those working in exclusion zone/regulated area who maybe exposed to COPR or hexavalent chromium	Required on hazardous waste sites for site workers. Site workers may potentially be required to wear respirators. This training applies to workers who may be directly exposed (direct contact) to COPR or hexavalent chromium. While the use of respiratory protection isn't expected to be required, this would allow the use of repiratory protection should site conditions warrant	Not applicable - superceded by 40-hour training	3 Days	Required annually	Required if directly supervises other workers	Respiratory protection program is required for workers who work on hazardous waste sites	Medical monitoring is required for workers who work on hazardous waste sites. Typically, HAZWOPER physicals also cover medical monitoring requirements under the Hexavalent Chromium Standard (verify with examining physician)	Hazard Communication Program is applicable for chemical usage including any chemicals brought onsite for use during site work.
Supervisory Type Personnel (Site Owner, Operators and/or Contractors or Other Parties)	Required for those working in exclusion zone/regulated area who maybe exposed to COPR or hexavalent chromium	Not required	Minimum Training allowable for working on hazardous waste sites and typically does not include in-depth coverage of respiratory protection and level C and B personal protection equipment. Cannot be used if respiratory protection will be required.	1 Day	Required annually	Required if directly supervises other workers	These types of workers are unlikely to be exposed to levels above the PEL/TLV therefore, the need for respiratory protection is not likely to be required	Workers are not expected to be exposed to elevated levels above the PEL/TLV, medical monitoring is not likely required under the OSHA Standard	Hazard Communication Program is applicable for chemical usage including any chemicals brought onsite for use during site work.

This table is provided for reference purposes; all parties conducting work at the subject site are responsible to verify applicability and comply with current requirements.

[1] Workers who have only received 24-hour of initial training who then need to wear a respirator will first be required to complete an additional 16 hour of classroom training and two additional days of on the job training and be enrolled in a medical monitoring program. If use of respirator is likely, then worker should receive 40-hours of initial training.

[2] Medical monitoring is required under the Hazardous Waste Operations and Emergency Response (HAZWOPER) standard (29 CFR 1926.65) and the Hexavalent Chromium Standard (29 CFR 1926.1126) if on site more than 30 days per year and exposed to hazardous waste or hexavalent chromium above applicable exposure limits (PEL/TLVs). In addition, medical clearance is required prior to wearing a respirator (29 CFR 1910.134). *If required, medical exams include baseline physicals, periodic exams (typically annually), and exit physicals. The content and frequency of medical exams must be determined in consultation with the BMUA's medical consultant/physican; typical medicial exam requirements include: occupational/medical history, physical exam, blood/urine test, ability to wear PPE (e.g., pulmonary function testing, EKG), and baseline monitoring based on potential onsite exposure to particular contaminants (e.g., hexavalent chromium). For further information, refer to OSHA Guidance Manual for Hazardous Waste Site Activities at http://www.cdc.gov/niosh/85-115.html*

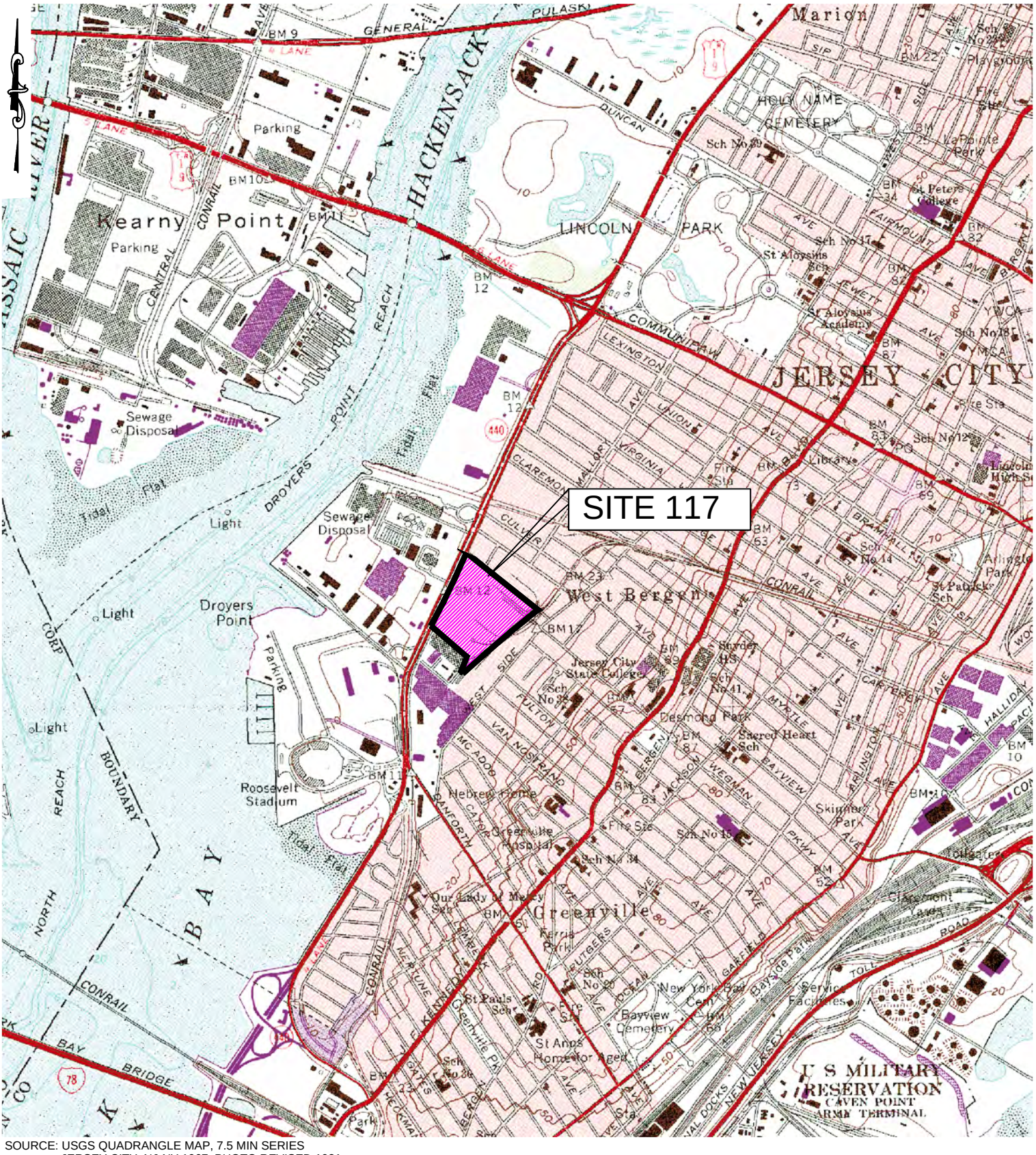
[3] *Hazard Communication is applicable to hazardous substances such as any chemical brought onsite for use during site work. For work on hazardous waste sites, a Site Health and Safety Plan would be required to be prepared and implemented by the site remediation contractor to address potential exposure to contaminated soils and/or groundwater. For more information, refer to the OSHA Hazard Communication Standard at http://www.osha.gov/dsg/hazcom/oshacomplianceassistance.html*

APPENDIX A

FIGURES

APPENDIX A-1

SITE LOCATION MAP
SITE 117 - FORMER RYERSON STEEL SITE



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

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PREPARED/DATE: STR 08/23/13	*CHECKED/DATE:* CMR 08/23/13

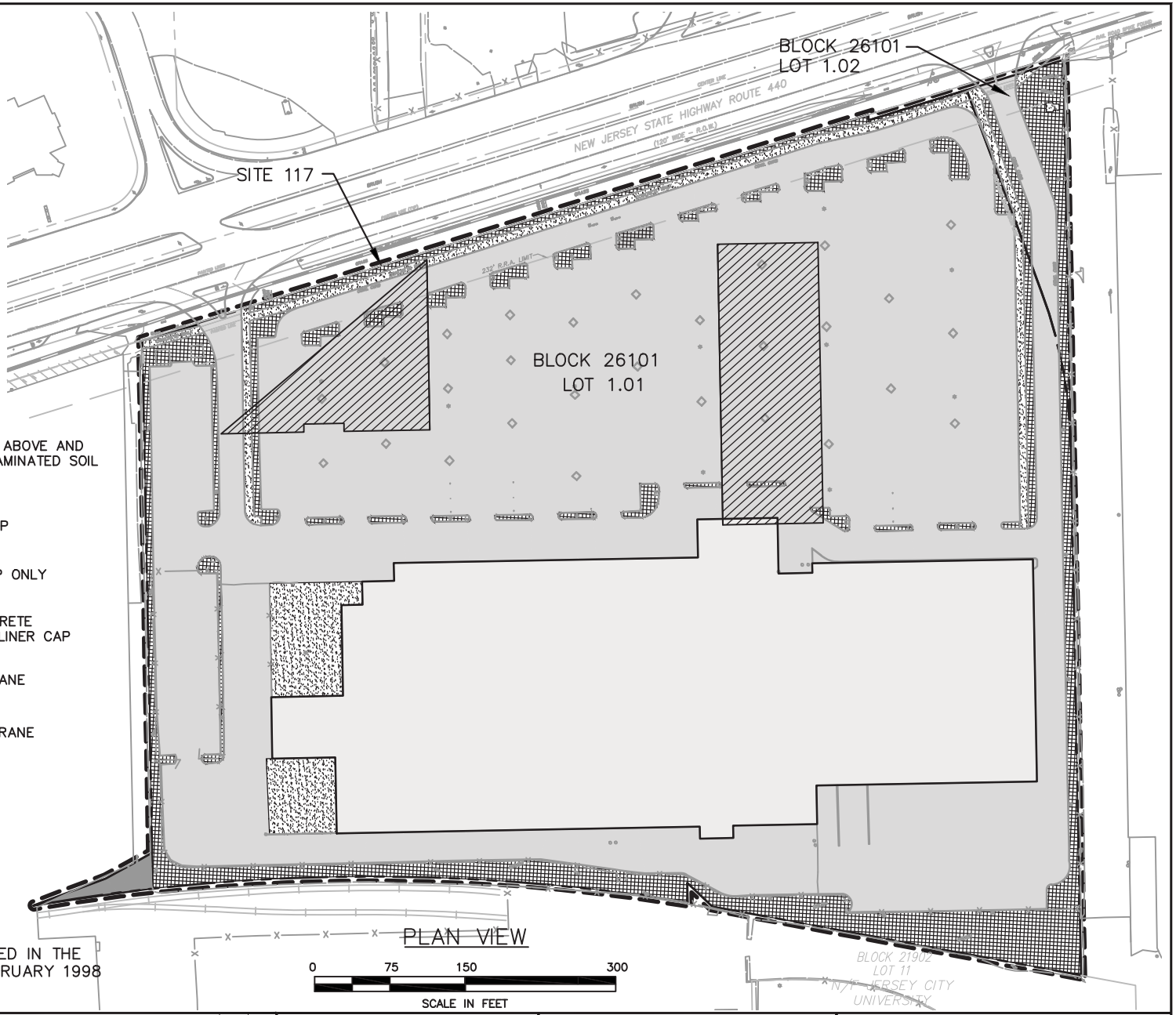
amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

SITE LOCATION MAP
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

FILE: P:\CADD\HONEYWELL\JERSEY CITY\SA 5\SITE 117 THE HOME DEPOT\3480050136\6100\610002\CURRENT DRAWINGS\3480050136-6100-A1VM-0000.DWG, DATE: 08/23/2013 09:37:10AM Layout: site 117

APPENDIX A-2

RESTRICTED AREAS AND ENGINEERING CONTROL LOCATION MAP
SITE 117 - FORMER RYERSON STEEL SITE



LEGEND

- AREA OF DOUBLE LINER ABOVE AND BELOW CHROMIUM CONTAMINATED SOIL CAP
- ASPHALT PAVEMENT & GEOMEMBRANE LINER CAP
- ASPHALT PAVEMENT CAP ONLY
- EXISTING BUILDING CONCRETE SLAB & GEOMEMBRANE LINER CAP
- CONCRETE & GEOMEMBRANE LINER CAP
- VEGETATIVE & GEOMEMBRANE LINER CAP
- LOT LINE
- RESTRICTED AREA

PLAN VIEW

0 75 150 300

SCALE IN FEET

REFERENCE
ENGINEERING CONTROLS ARE DESCRIBED IN THE REMEDIAL ACTION REPORT DATED FEBRUARY 1998 PREPARED BY ENVIRO-SCIENCES, INC.

REV.	DATE	STATUS	DRFT BY	CHKD BY

AMEC PROJ No.: 3480050361
DRAWING: 3480050136-6100-B1EC-1170

PREPARED/DATE: STR 08/23/13
CHECKED/DATE: CMR 08/23/13

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

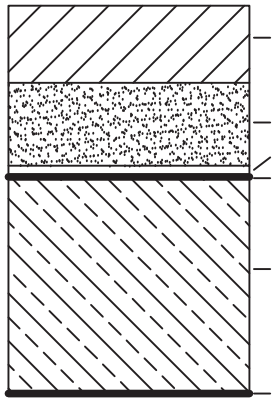
RESTRICTED AREAS AND ENGINEERING CONTROL LOCATION MAP

SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

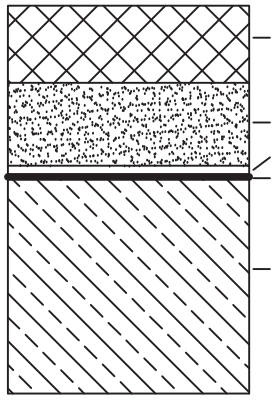
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APPENDIX A-3

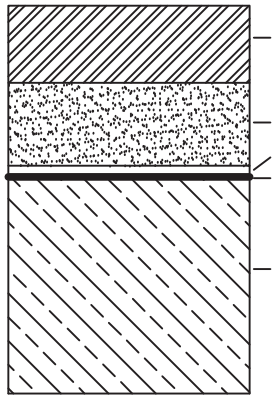
ENGINEERING CONTROL AS-BUILT DIAGRAM
SITE 117 - FORMER RYERSON STEEL



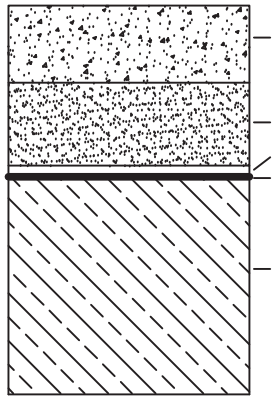
DOUBLE LINER ABOVE AND BELOW CONTAMINATED SOIL CAP



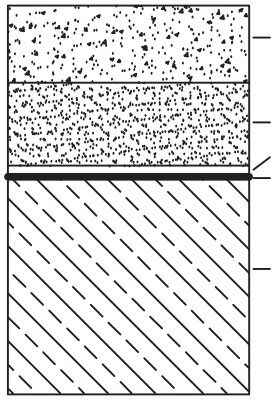
VEGETATIVE & GEOMEMBRANE LINER CAP



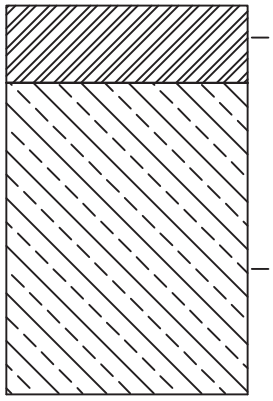
ASPHALT PAVEMENT & GEOMEMBRANE LINER CAP



CONCRETE & GEOMEMBRANE LINER CAP



EXISTING BUILDING CONCRETE SLAB & GEOMEMBRANE LINER CAP



ASPHALT PAVEMENT CAP

REFERENCE
ENGINEERING CONTROLS ARE DESCRIBED IN THE REMEDIAL ACTION REPORT DATED FEBRUARY 1998 PREPARED BY ENVIRO-SCIENCES, INC.

REV.	DATE	STATUS	DRFT BY	CHKD BY

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DRAWING: 3480050136-6100-B1EC-0000

PREPARED/DATE: STR 08/23/13
CHECKED/DATE: CMR 08/23/13

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

ENGINEERING CONTROL
AS-BUILT DIAGRAM
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

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APPENDIX A-4

MEMBRANE GRADING PLAN/TYPICAL CROSS-SECTIONS & DETAILS
(McNally Engineering, 1997)

SITE 117 - FORMER RYERSON STEEL

NOTE: The membrane grading plan contains spot elevation data associated with placement of the liner. The elevation data provides an estimate of the liner elevation and can be compared with current surface elevation survey data to provide an estimate on the amount of fill material above the liner. The cross-sections show the liner elevation across the site and details regarding liner placement in the area of structures and utilities.

W - E

N - S

DRAINAGE TRENCH

FOOTING TRENCH

SANITARY TRENCH

4" PVC SUB-DRAIN

DRAINAGE TRENCH

GAS LINE TRENCH

WATER LINE TRENCH

WATER METER PIT

PYLON SIGN

NEW JERSEY STATE HIGHWAY ROUTE 440

NORTH BOUND

SOUTH BOUND

A

B

W - E

NOTE: ELEVATIONS ARE N.G.V.D. 1929 DATUM

12.00 FOOTING SPOT MEMBRANE COMPOSITE ELEVATION

(X) 12.00 UTILITY POLE MEMBRANE COMPOSITE ELEVATION

EXISTING SPOT ELEVATION

x 10.02 PROPOSED SPOT MEMBRANE COMPOSITE ELEVATION

[X] 12.00 LIGHT POLE MEMBRANE COMPOSITE ELEVATION

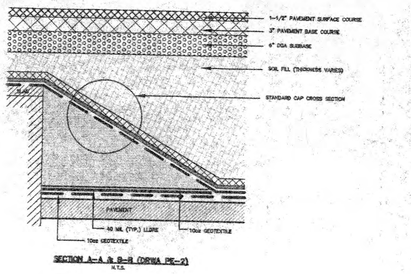
TRENCH EXCAVATION

AREA OF 6" OF FILL TO ELIMINATE LOW POINT

HIGH FLOW NET AREA

PROPOSED CONTAMINATED STORAGE AREA
WITH NO UNDERLYING MEMBRANE ABOVE EXISTING CONCRETE

PROPOSED CONTAMINATED STORAGE AREA (IF NEEDED)
WITH UNDERLYING MEMBRANE



SECTION A-A & B-B (CAPPING PE-2)
N.T.S.

NOTES FOR GEOSYNTHETIC MATERIALS:

1. THE CONTRACTOR MAY PROVIDE TWO PRODUCTS TO MEET THE TRANSMISSIVITY REQUIREMENTS FOR THE GEOSYNTHETIC DRAINAGE MATERIAL. IF SO, THE HIGH FLOW PRODUCT WILL BE DEPLOYED IN THE SHADED AREAS SHOWN ON THIS SHEET. THE UNSHADED AREAS CAN PROVIDED IN THE TECHNICAL SPECIFICATIONS.

2. THE HIGH FLOW PRODUCT SHALL BE DEPLOYED WITH THE MACHINE DIRECTION PERPENDICULAR TO THE CLOSET SITE PROPERTY LINE.

NOTE:
AN INVESTIGATION OF EXISTING SOILS SHOULD BE DONE PRIOR TO CONSTRUCTION. MCNALLY ENGINEERING MAKES NO REPRESENTATIONS AS TO THE SUITABILITY OF EXISTING SOIL AS FILL MATERIAL.

REV.	DATE	DESCRIPTION
2	5/03/99	REVISED CULVERT AND LIGHT POLE ELEVATIONS
1	3/16/99	REVISED PER DEP COMMENTS

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CHECKED BY : M.M.
PROJECT No: 98204

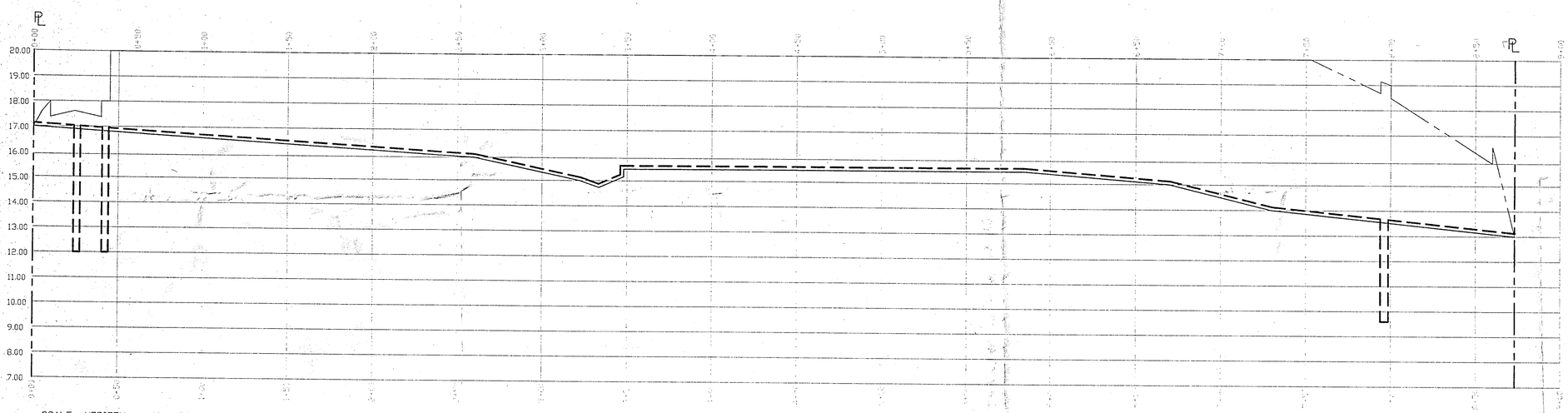
MICHAEL B. McNALLY
PROFESSIONAL ENGINEER AND LAND SURVEYOR No.16032

DRAWING TITLE
MEMBRANE GRADING PLAN

440 COMMONS
NJ STATE HWY. 440
JERSEY CITY, NEW JERSEY

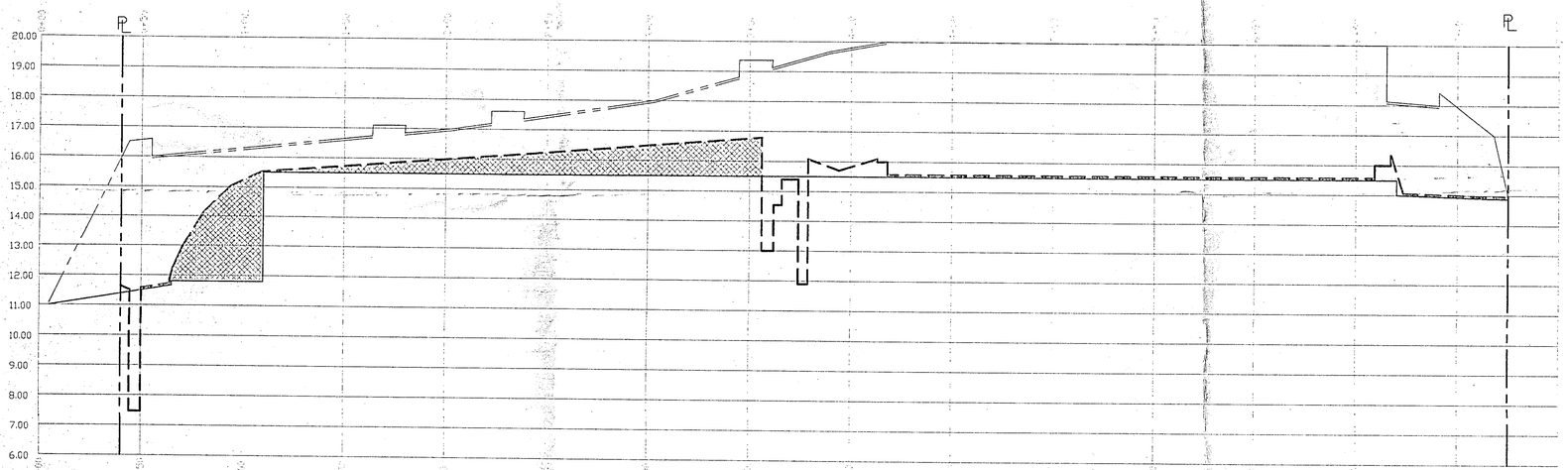
MCNALLY ENGINEERING
393 Ramapo Valley Road
Suite # 4
Oakland, New Jersey, 07436
(201) 337-9051

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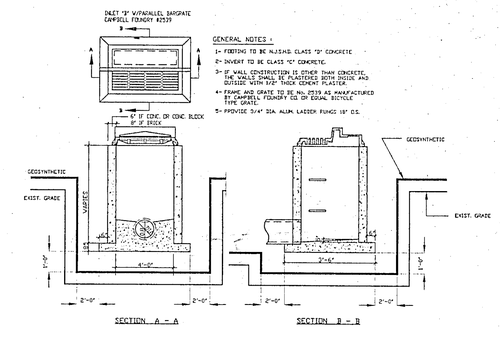
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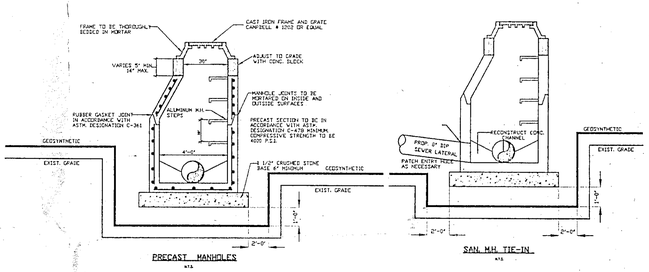


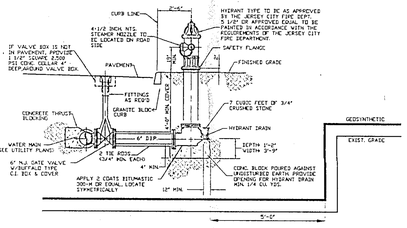
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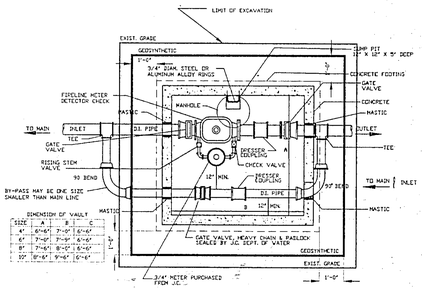


INLETS
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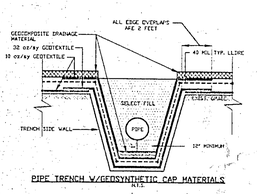




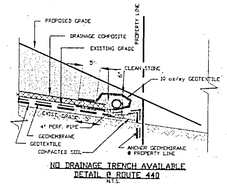
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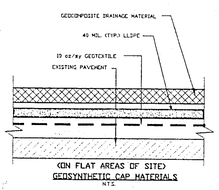
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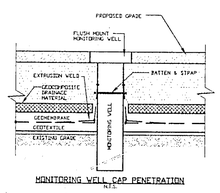
PIPE TRENCH W/GEOSYNTHETIC CAP MATERIALS
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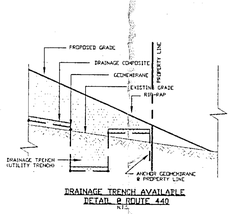
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DETAIL @ ROUTE 440
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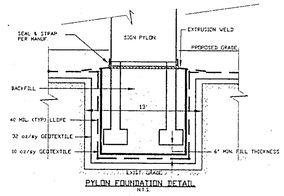
(ON FLAT AREAS OF SITE)
GEOSYNTHETIC CAP MATERIALS
N.T.S.



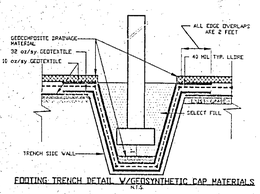
MONITORING WELL CAP PENETRATION
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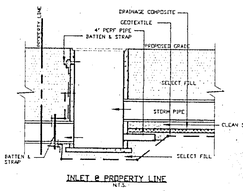
DRAINAGE TRENCH AVAILABLE
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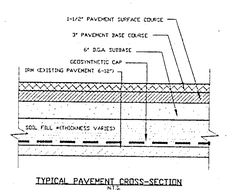
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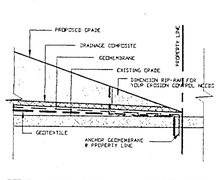
FOOTING TRENCH DETAIL W/GEOSYNTHETIC CAP MATERIALS
N.T.S.



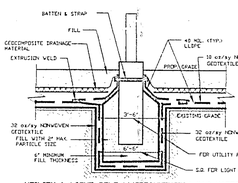
INLET @ PROPERTY LINE
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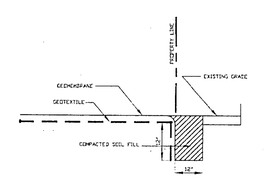
TYPICAL PAVEMENT CROSS-SECTION
N.T.S.



DETAIL @ NORTH, EAST, & SOUTH PROPERTY LINE
N.T.S.



UTILITY & LIGHT POLE W/GEOSYNTHETIC CAP MATERIALS
N.T.S.



GEOMEMBRANE PERIMETER TERMINATION DETAIL
N.T.S.

* NOTE
SOIL IN IMMEDIATE CONTACT WITH GEOSYNTHETIC CAP WILL HAVE A 2" MAXIMUM PARTICLE SIZE (SEE FIRST LIFT PLACED)

LEGEND

- EXIST. GRADE
- PROPOSED GEOSYNTHETIC CAP
- PROPOSED VEGETATED GRADE
- PROPOSED ASPHALT
- CONTAMINATED SOIL STORAGE AREA

NOTE:
AN INVESTIGATION OF EXISTING SOILS SHOULD BE DONE PRIOR TO CONSTRUCTION. MCNALLY ENGINEERING MAKES NO REPRESENTATIONS AS TO THE SUITABILITY OF EXISTING SOIL AS FILL MATERIAL.

REV.	DATE	DESCRIPTION
1	6/18/97	REVISED PER DEP COMMENTS

DRAWN BY : N.A.
CHECKED BY : M.McG.
PROJECT No: 96204

DRAWING TITLE
TYPICAL CROSS-SECTION & DETAILS

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SCALE	DATE :	SHEET No:	DWG No:
AS SHOWN	05/30/97	1 OF 8	1

C:\NAZIR\440\DEP\DEP-1 Tue Jun 10 08:07:53 1997 Copyright 1995 McNALLY Eng. All Rights Reseved

APPENDIX B

FACT SHEETS: CHROMIUM INFORMATION AND POTENTIAL HEALTH HAZARDS

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

CHROMIUM

CAS # 7440-47-3

Division of Toxicology and Environmental Medicine ToxFAQs™ September 2008

This fact sheet answers the most frequently asked health questions (FAQs) about chromium. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to chromium occurs from ingesting contaminated food or drinking water or breathing contaminated workplace air. Chromium(VI) at high levels can damage the nose and cause cancer. Ingesting high levels of chromium(VI) may result in anemia or damage to the stomach or intestines. Chromium(III) is an essential nutrient. Chromium has been found in at least 1,127 of the 1,669 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is chromium?

Chromium is a naturally occurring element found in rocks, animals, plants, and soil. It can exist in several different forms. Depending on the form it takes, it can be a liquid, solid, or gas. The most common forms are chromium(0), chromium(III), and chromium(VI). No taste or odor is associated with chromium compounds.

The metal chromium, which is the chromium(0) form, is used for making steel. Chromium(VI) and chromium(III) are used for chrome plating, dyes and pigments, leather tanning, and wood preserving.

What happens to chromium when it enters the environment?

❑ Chromium can be found in air, soil, and water after release from the manufacture, use, and disposal of chromium-based products, and during the manufacturing process.
❑ Chromium does not usually remain in the atmosphere, but is deposited into the soil and water .
❑ Chromium can easily change from one form to another in water and soil, depending on the conditions present.
❑ Fish do not accumulate much chromium in their bodies from water.

How might I be exposed to chromium?

❑ Eating food containing chromium(III).
❑ Breathing contaminated workplace air or skin contact during use in the workplace.
❑ Drinking contaminated well water.
❑ Living near uncontrolled hazardous waste sites containing chromium or industries that use chromium.

How can chromium affect my health?

Chromium(III) is an essential nutrient that helps the body use sugar, protein, and fat.

Breathing high levels of chromium(VI) can cause irritation to the lining of the nose, nose ulcers, runny nose, and breathing problems, such as asthma, cough, shortness of breath, or wheezing. The concentrations of chromium in air that can cause these effects may be different for different types of chromium compounds, with effects occurring at much lower concentrations for chromium(VI) compared to chromium(III).

The main health problems seen in animals following ingestion of chromium(VI) compounds are irritation and ulcers in the stomach and small intestine and anemia. Chromium(III) compounds are much less toxic and do not appear to cause these problems.

Sperm damage and damage to the male reproductive system have also been seen in laboratory animals exposed to chromium(VI).

OSHA FactSheet

Health Effects of Hexavalent Chromium

Hexavalent chromium is a toxic form of the element chromium. Hexavalent chromium compounds are man-made and widely used in many different industries.

Some major industrial sources of hexavalent chromium are:

- chromate pigments in dyes, paints, inks, and plastics
- chromates added as anti-corrosive agents to paints, primers and other surface coatings
- chrome plating by depositing chromium metal onto an item's surface using a solution of chromic acid
- particles released during smelting of ferro-chromium ore
- fume from welding stainless steel or nonferrous chromium alloys
- impurity present in portland cement.

How hexavalent chromium can harm employees

Workplace exposure to hexavalent chromium may cause the following health effects:

- lung cancer in workers who breathe airborne hexavalent chromium
- irritation or damage to the nose, throat, and lung (respiratory tract) if hexavalent chromium is breathed at high levels
- irritation or damage to the eyes and skin if hexavalent chromium contacts these organs in high concentrations.

How hexavalent chromium affects the nose, throat and lungs

Breathing in high levels of hexavalent chromium can cause irritation to the nose and throat. Symptoms may include runny nose, sneezing, coughing, itching and a burning sensation.

Repeated or prolonged exposure can cause sores to develop in the nose and result in nosebleeds. If the damage is severe, the nasal septum (wall separating the nasal passages) develops a hole in it (perforation).

Breathing small amounts of hexavalent chromium even for long periods does not cause respiratory tract irritation in most people.

Some employees become allergic to hexavalent chromium so that inhaling chromate compounds can cause asthma symptoms such as wheezing and shortness of breath.

How hexavalent chromium affects the skin

Some employees can also develop an allergic skin reaction, called allergic contact dermatitis. This occurs from handling liquids or solids containing hexavalent chromium. Once an employee becomes allergic, brief skin contact causes swelling and a red, itchy rash that becomes crusty and thickened with prolonged exposure. Allergic contact dermatitis is long-lasting and more severe with repeated skin contact.

Direct skin contact with hexavalent chromium can cause a non-allergic skin irritation. Contact with non-intact skin can also lead to chrome ulcers. These are small crusted skin sores with a rounded border. They heal slowly and leave scars.

How employees can be exposed to hexavalent chromium

Employees can inhale airborne hexavalent chromium as a dust, fume or mist while:

- producing chromate pigments and powders; chromic acid; chromium catalysts, dyes, and coatings
- working near chrome electoplating
- welding and hotworking stainless steel, high chrome alloys and chrome-coated metal
- applying and removing chromate-containing paints and other surface coatings.

Right to Know
Hazardous Substance Fact Sheet

Common Name: **CHROMIUM**

Synonyms: Chrome; Metallic Chromium

Chemical Name: Chromium

Date: January 2000 Revision: March 2009

CAS Number: 7440-47-3

RTK Substance Number: 0432

DOT Number: UN 3089

EMERGENCY RESPONDERS >>>> SEE LAST PAGE

Description and Use

Chromium is a hard, gray, odorless solid with a metallic luster. It is used in stainless and alloy steels, in making alloys, and as an isotope in medicine and research.

Hazard Summary

Hazard Rating	NJDHSS	NFPA
HEALTH	2	-
FLAMMABILITY	3	-
REACTIVITY	0	-

FLAMMABLE POWDER
POISONOUS GASES ARE PRODUCED IN FIRE
CONTAINERS MAY EXPLODE IN FIRE

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

Reasons for Citation

- **Chromium** is on the Right to Know Hazardous Substance List because it is cited by OSHA, ACGIH, DOT, NIOSH, DEP, IARC and EPA.
- This chemical is on the Special Health Hazard Substance List.

- **Chromium** can affect you when inhaled.
- Contact can irritate and burn the skin and eyes with possible eye damage.
- Inhaling **Chromium** can irritate the nose and throat.
- Exposure to **Chromium** *fumes* can cause a flu-like illness called *metal fume fever.*
- **Chromium** may cause a skin allergy and an asthma-like allergy
- Inhaling **Chromium** can cause a sore and/or a hole in the "bone" (septum) dividing the inner nose.
- **Chromium** may affect the liver and kidneys.
- **Chromium** in *powder* form is FLAMMABLE and a DANGEROUS FIRE HAZARD. It may also spontaneously explode in air.

SEE GLOSSARY ON PAGE 5.

FIRST AID

Eye Contact
- Immediately flush with large amounts of water for at least 30 minutes, lifting upper and lower lids. Remove contact lenses, if worn, while flushing. Seek medical attention.

Skin Contact
- Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water.

Inhalation
- Remove the person from exposure
- Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- Transfer promptly to a medical facility.

EMERGENCY NUMBERS

Poison Control: 1-800-222-1222

CHEMTREC: 1-800-424-9300

NJDEP Hotline: 1-877-927-6337

National Response Center: 1-800-424-8802

Workplace Exposure Limits

OSHA: The legal airborne permissible exposure limit (PEL) is **1 mg/m^3** averaged over an 8-hour workshift.

NIOSH: The recommended airborne exposure limit (REL) is **0.5 mg/m^3** averaged over a 8-hour workshift.

ACGIH: The threshold limit value (TLV) is **0.5 mg/m^3** averaged over an 8-hour workshift.

Determining Your Exposure

- Read the product manufacturer's Material Safety Data Sheet (MSDS) and the label to determine product ingredients and important safety and health information about the product mixture.
- For each individual hazardous ingredient, read the New Jersey Department of Health and Senior Services Hazardous Substance Fact Sheet, available on the RTK Program website (www.nj.gov/health/eoh/rtkweb) or in your facility's RTK Central File or Hazard Communication Standard file.
- You have a right to this information under the New Jersey Worker and Community Right to Know Act, the Public Employees Occupational Safety and Health (PEOSH) Act if you are a public worker in New Jersey, and under the federal Occupational Safety and Health Act (OSHA) if you are a private worker.
- The New Jersey Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) and the PEOSH Hazard Communication Standard (N.J.A.C. 12:100-7) require employers to provide similar information and training to their employees.

This Fact Sheet is a summary of available information regarding the health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

Health Hazard Information

Acute Health Effects
The following acute (short-term) health effects may occur immediately or shortly after exposure to **Chromium**:

- Contact can irritate and burn the skin and eyes with possible eye damage.
- Inhaling **Chromium** can irritate the nose and throat causing coughing and wheezing.
- Exposure to **Chromium** *fumes* can cause *"metal fume fever."* This is a flu-like illness with symptoms of metallic taste in the mouth, headache, fever and chills, aches, chest tightness and cough. The symptoms may be delayed for several hours after exposure and usually last for a day or two.

Chronic Health Effects
The following chronic (long-term) health effects can occur at some time after exposure to **Chromium** and can last for months or years:

Cancer Hazard
- While **Chromium** has been tested, it is not classifiable as to its potential to cause cancer.

Reproductive Hazard
- There is no evidence that **Chromium** affects reproduction. This is based on test results presently available to the NJDHSS from published studies.

Other Effects
- Inhaling **Chromium** can cause a sore and/or a hole in the "bone" (septum) dividing the inner nose, sometimes with bleeding, discharge, and/or formation of a crust.
- **Chromium** may cause a skin allergy. If allergy develops, very low future exposure can cause itching and a skin rash.
- **Chromium** may cause an asthma-like allergy. Future exposure can cause asthma attacks with shortness of breath, wheezing, coughing, and/or chest tightness.
- Prolonged skin contact can cause burns, blisters and deep ulcers
- **Chromium** may affect the liver and kidneys.

Medical

Medical Testing
For frequent or potentially high exposure (half the TLV or greater), the following are recommended before beginning work and at regular times after that:

- Lung function tests. The results may be normal if the person is not having an attack at the time of the test.

If symptoms develop or overexposure is suspected, the following are recommended:

- Examine your skin periodically for little bumps or blisters, the first sign of "chrome ulcers." If not treated early, these can last for years after exposure.
- Evaluation by a qualified allergist can help diagnose skin allergy.
- Liver and kidney function tests

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures
- Smoking can cause heart disease, lung cancer, emphysema, and other respiratory problems. It may worsen respiratory conditions caused by chemical exposure. Even if you have smoked for a long time, stopping now will reduce your risk of developing health problems.
- More than light alcohol consumption can cause liver damage. Drinking alcohol can increase the liver damage caused by **Chromium**.

Workplace Controls and Practices

Very toxic chemicals, or those that are reproductive hazards or sensitizers, require expert advice on control measures if a less toxic chemical cannot be substituted. Control measures include: (1) enclosing chemical processes for severely irritating and corrosive chemicals, (2) using local exhaust ventilation for chemicals that may be harmful with a single exposure, and (3) using general ventilation to control exposures to skin and eye irritants. For further information on workplace controls, consult the NIOSH document on Control Banding at www.cdc.gov/niosh/topics/ctrlbanding/.

The following work practices are also recommended:

- Label process containers.
- Provide employees with hazard information and training.
- Monitor airborne chemical concentrations.
- Use engineering controls if concentrations exceed recommended exposure levels.
- Provide eye wash fountains and emergency showers.
- Wash or shower if skin comes in contact with a hazardous material.
- Always wash at the end of the workshift.
- Change into clean clothing if clothing becomes contaminated.
- Do not take contaminated clothing home.
- Get special training to wash contaminated clothing.
- Do not eat, smoke, or drink in areas where chemicals are being handled, processed or stored.
- Wash hands carefully before eating, smoking, drinking, applying cosmetics or using the toilet.

In addition, the following may be useful or required:

- Before entering a confined space where **Chromium** *powder* may be present, check to make sure that an explosive concentration does not exist.
- Use a vacuum or a wet method to reduce dust during clean-up. DO NOT DRY SWEEP.

Personal Protective Equipment

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Gloves and Clothing

- Avoid skin contact with **Chromium**. Wear personal protective equipment made from material which can not be permeated or degraded by this substance. Safety equipment suppliers and manufacturers can provide recommendations on the most protective glove and clothing material for your operation.
- Safety equipment manufacturers recommend Nitrile and Natural Rubber for gloves, and Tyvek®, or the equivalent, as a protective material for clothing.
- All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

- Wear eye protection with side shields or goggles.
- If additional protection is needed for the entire face, use in combination with a face shield. A face shield should not be used without another type of eye protection.

Respiratory Protection

Improper use of respirators is dangerous. Respirators should only be used if the employer has implemented a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

- Where the potential exists for exposure over **0.5 mg/m^3**, use a NIOSH approved negative pressure, air-purifying, particulate filter respirator with an N, R or P95 filter. More protection is provided by a full facepiece respirator than by a half-mask respirator, and even greater protection is provided by a powered-air purifying respirator.
- Leave the area immediately if (1) while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **Chromium**, (2) while wearing particulate filters abnormal resistance to breathing is experienced, or (3) eye irritation occurs while wearing a full facepiece respirator. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter or cartridge. If the seal is no longer good, you may need a new respirator.
- Consider all potential sources of exposure in your workplace. You may need a combination of filters, prefilters or cartridges to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
- Where the potential exists for exposure over **5 mg/m^3**, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.
- Exposure to **250 mg/m^3** is immediately dangerous to life and health. If the possibility of exposure above **250 mg/m^3** exists, use a NIOSH approved self-contained breathing apparatus with a full facepiece operated in a pressure-demand or other positive-pressure mode equipped with an emergency escape air cylinder.

Fire Hazards

If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

- Extinguish fire using an agent suitable for type of surrounding fire. **Chromium** itself does not burn.
- **Chromium** in *powder* form is FLAMMABLE and a DANGEROUS FIRE HAZARD. It may also spontaneously explode in air.
- Use dry sand or dry chemical extinguishing agents to fight **Chromium** *powder* fires.
- POISONOUS GASES ARE PRODUCED IN FIRE.
- CONTAINERS MAY EXPLODE IN FIRE.
- DO NOT get water inside container.

Spills and Emergencies

If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

If **Chromium** *powder* is spilled, take the following steps:

- Evacuate personnel and secure and control entrance to the area.
- Eliminate all ignition sources.
- Moisten spilled material first or use a HEPA-filter vacuum for clean-up and place into sealed containers for disposal.
- Keep **Chromium** *powder* out of confined spaces, such as sewers, because of the possibility of an explosion.
- Ventilate and wash area after clean-up is complete.
- DO NOT wash into sewer.
- It may be necessary to contain and dispose of **Chromium** as a HAZARDOUS WASTE. Contact your state Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.

Handling and Storage

Prior to working with **Chromium** you should be trained on its proper handling and storage.

- **Chromium** may react violently or explosively with AMMONIUM NITRATE; CARBON DIOXIDE ATMOSPHERES; BROMINE PENTAFLUORIDE; LITHIUM; NITROGEN OXIDES; and SULFUR DIOXIDE.
- **Chromium** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE); STRONG ACIDS (such as HYDROCHLORIC and SULFURIC); and ALKALI METALS (such as SODIUM and POTASSIUM).
- Store in tightly closed containers in a cool, well-ventilated area.
- Sources of ignition, such as smoking and open flames, are prohibited where **Chromium** *powder* is used, handled, or stored.

Occupational Health Information Resources

The New Jersey Department of Health and Senior Services, Occupational Health Service, offers multiple services in occupational health. These services include providing informational resources, educational materials, public presentations, and industrial hygiene and medical investigations and evaluations.

For more information, please contact:

New Jersey Department of Health & Senior Services
Right to Know Program
PO Box 368
Trenton, NJ 08625-0368
Phone: 609-984-2202
Fax: 609-984-7407
E-mail: rtk@doh.state.nj.us
Web address: http://www.nj.gov/health/eoh/rtkweb

The Right to Know Hazardous Substance Fact Sheets are not intended to be copied and sold for commercial purposes.

GLOSSARY

ACGIH is the American Conference of Governmental Industrial Hygienists. They publish guidelines called Threshold Limit Values (TLVs) for exposure to workplace chemicals.

Acute Exposure Guideline Levels (AEGLs) are established by the EPA. They describe the risk to humans resulting from once-in-a lifetime, or rare, exposure to airborne chemicals.

Boiling point is the temperature at which a substance can change its physical state from a liquid to a gas.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is unique, identifying number, assigned by the Chemical Abstracts Service, to a specific chemical.

CFR is the Code of Federal Regulations, which are the regulations of the United States government.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes destruction of human skin or severe corrosion of containers.

DEP is the New Jersey Department of Environmental Protection.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

ERG is the Emergency Response Guidebook. It is a guide for emergency responders for transportation emergencies involving hazardous substances.

Emergency Response Planning Guideline (ERPG) values provide estimates of concentration ranges where one reasonably might anticipate observing adverse effects.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

IARC is the International Agency for Research on Cancer, a scientific group.

Ionization Potential is the amount of energy needed to remove an electron from an atom or molecule. It is measured in electron volts.

IRIS is the Integrated Risk Information System database on human health effects that may result from exposure to various chemicals, maintained by federal EPA.

LEL or **Lower Explosive Limit**, is the lowest concentration of a combustible substance (gas or vapor) in the air capable of continuing an explosion.

mg/m^3 means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the federal Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PEOSHA is the New Jersey Public Employees Occupational Safety and Health Act, which adopts and enforces health and safety standards in public workplaces.

Permeated is the movement of chemicals through protective materials.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

Protective Action Criteria (PAC) are values established by the Department of Energy and are based on AEGLs and ERPGs. They are used for emergency planning of chemical release events.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

STEL is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

UEL or **Upper Explosive Limit** is the highest concentration in air above which there is too much fuel (gas or vapor) to begin a reaction or explosion.

Vapor Density is the ratio of the weight of a given volume of one gas to the weight of another (usually *Hydrogen*), at the same temperature and pressure.

The **vapor pressure** is a force exerted by the vapor in equilibrium with the solid or liquid phase of the same substance. The higher the vapor pressure the higher concentration of the substance in air.

Right to Know Hazardous Substance Fact Sheet

Emergency Responders Quick Reference

Common Name: **CHROMIUM**

Synonyms: Chrome; Metallic Chromium
CAS No: 7440-47-3
Molecular Formula: Cr
RTK Substance No: 0432
Description: Hard, gray, odorless solid with a metallic luster

HAZARD DATA

Hazard Rating	Firefighting	Reactivity
2 - Health **3 - Fire** **0 - Reactivity** **DOT#:** UN 3089 **ERG Guide #:** 170 **Hazard Class:** 4.1 (Flammable Solid)	Extinguish fire using an agent suitable for type of surrounding fire. **Chromium** itself does not burn. **Chromium** in *powder* form is FLAMMABLE and a DANGEROUS FIRE HAZARD. It may also spontaneously explode in air. Use dry sand or dry chemical extinguishing agents to fight **Chromium** *powder* fires. POISONOUS GASES ARE PRODUCED IN FIRE. CONTAINERS MAY EXPLODE IN FIRE. DO NOT get water inside container.	**Chromium** may react violently or explosively with AMMONIUM NITRATE; CARBON DIOXIDE ATMOSPHERES; BROMINE PENTAFLUORIDE; LITHIUM; NITROGEN OXIDES; and SULFUR DIOXIDE. **Chromium** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE); STRONG ACIDS (such as HYDROCHLORIC and SULFURIC); and ALKALI METALS (such as SODIUM and POTASSIUM).

SPILL/LEAKS

Isolation Distance:

Spill: 25 meters (75 feet)

Fire: 800 meters (1/2 mile)

Moisten spilled material first or use a HEPA-filter vacuum for clean-up and place into sealed containers for disposal.

Keep **Chromium** *powder* out of confined spaces, such as sewers, because of the possibility of an explosion.

DO NOT wash into sewer.

PHYSICAL PROPERTIES

Odor Threshold:	Odorless
Flash Point:	Noncombustible solid, Flammable *powder*
Vapor Pressure:	<0 mm Hg at 68°F (20°C) (approximate)
Specific Gravity:	7.2 (water = 1)
Water Solubility:	Insoluble
Boiling Point:	4,788°F (2,642°C)
Melting Point:	3,452°F (1,900°C)
Molecular Weight:	52

EXPOSURE LIMITS

OSHA:	1 mg/m^3, 8-hr TWA
NIOSH:	0.5 mg/m^3, 8-hr TWA
ACGIH:	0.5 mg/m^3, 8-hr TWA
IDLH:	250 mg/m^3

The Protective Action Criteria values are:

PAC-1 = 1.5 mg/m^3 PAC-3 = 250 mg/m^3

PAC-2 = 2.5 mg/m^3

PROTECTIVE EQUIPMENT

Gloves:	Nitrile or Natural Rubber
Coveralls:	Tyvek®
Respirator:	>0.5 mg/m^3 - full facepiece APR with High efficiency filters >1.5 mg/m^3 - SCBA

HEALTH EFFECTS

Eyes:	Irritation, burns and possible eye damage
Skin:	Irritation, burns, itching, rash and skin ulcers
Inhalation:	Nose and throat irritation with coughing and wheezing Headache, fever and chills

FIRST AID AND DECONTAMINATION

Remove the person from exposure.

Flush eyes with large amounts of water for at least 30 minutes. Remove contact lenses if worn. Seek medical attention.

Quickly remove contaminated clothing and wash contaminated skin with large amounts of soap and water.

Begin artificial respiration if breathing has stopped and CPR if necessary.

Transfer promptly to a medical facility.

Skin exposure can occur during direct handling of hexavalent chromium-containing solutions, coatings, and cements.

Steps OSHA has taken to protect employees from health hazards caused by hexavalent chromium

The new OSHA workplace standard requires employers to:

- limit eight-hour time-weighted average hexavalent chromium exposure in the workplace to 5 micrograms or less per cubic meter of air.
- perform periodic monitoring at least every 6 months if initial monitoring shows employee exposure at or above the action level (2.5 micrograms per cubic meter of air calculated as an 8-hour time-weighted average).
- provide appropriate personal protective clothing and equipment when there is likely to be a hazard present from skin or eye contact.
- implement good personal hygiene and housekeeping practices to prevent hexavalent chromium exposure.
- prohibit employee rotation as a method to achieve compliance with the exposure limit (PEL).
- provide respiratory protection as specified in the standard.
- make available medical examinations to employees within 30 days of initial assignment, annually, to those exposed in an emergency situation, to those who experience signs or symptoms of adverse health effects associated with hexavalent chromium exposure, to those who are or may be exposed at or above the action level for 30 or more days a year, and at termination of employment.

For more complete information:

OSHA Occupational Safety and Health Administration

U.S. Department of Labor

www.osha.gov

(800) 321-OSHA

DSG 7/2006

Skin contact with certain chromium(VI) compounds can cause skin ulcers. Some people are extremely sensitive to chromium(VI) or chromium(III). Allergic reactions consisting of severe redness and swelling of the skin have been noted.

How likely is chromium to cause cancer?

The Department of Health and Human Services (DHHS), the International Agency for Reseach on Cancer (IARC), and the EPA have determined that chromium(VI) compounds are known human carcinogens. In workers, inhalation of chromium(VI) has been shown to cause lung cancer. Chromium(VI) also causes lung cancer in animals. An increase in stomach tumors was observed in humans and animals exposed to chromium(VI) in drinking water.

How can chromium affect children?

It is likely that health effects seen in children exposed to high amounts of chromium will be similar to the effects seen in adults.

We do not know if exposure to chromium will result in birth defects or other developmental effects in people. Some developmental effects have been observed in animals exposed to chromium(VI).

How can families reduce the risks of exposure to chromium?

❑ Children should avoid playing in soils near uncontrolled hazardous waste sites where chromium may have been discarded.

❑ Chromium is a component of tobacco smoke. Avoid smoking in enclosed spaces like inside the home or car in order to limit exposure to children and other family members.

❑ Although chromium(III) is an essential nutrient, you should avoid excessive use of dietary supplements containing chromium.

Is there a medical test to determine whether I've been exposed to chromium?

Since chromium(III) is an essential element and naturally occurs in food, there will always be some level of chromium in your body. Chromium can be measured in hair, urine, and blood.

Higher than normal levels of chromium in blood or urine may indicate that a person has been exposed to chromium. However , increases in blood and urine chromium levels cannot be used to predict the kind of health effects that might develop from that exposure.

Has the federal government made recommendations to protect human health?

The EPA has determined that exposure to chromium in drinking water at concentrations of 1 mg/L for up to 10 days is not expected to cause any adverse effects in a child.

The FDA has determined that the chromium concentration in bottled drinking water should not exceed 1 mg/L.

The Occupational Health and Safety Administration (OSHA) has limited workers' exposure to an average of 0.005 mg/m^3 chromium(VI), 0.5 mg/m^3 chromium(III), and 1.0 mg/m^3 chromium(0) for an 8-hour workday, 40-hour workweek.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2008. Toxicological Profile for Chromium (Draft for Public Comment). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmenta l quality department if you have any more questions or concerns.

APPENDIX C

CAP/LINER REFERENCE INFORMATION AND SPECIFICATIONS
[Reference: Remedial Action Report dated February 1998; EnviroSciences, Inc.]

BLACK & VEATCH

601 Walnut Street, Suite 850W, Philadelphia, Pennsylvania 19106-3307, Tel. (215) 928-0700, Fax. (215) 928-1780

AlliedSignal Inc.
Ryerson Steel Site

B&V Project 34941.100
June 5, 1997

Mr. E. J. Walerko
101 Columbia Road
P. O. Box 2105
Morristown, New Jersey 07962-1057

Subject: Engineering Certification of Geosynthetic Design

Dear Emil,

In accordance with a request from Mark London (ESI Inc.), we have drafted a certification statement regarding the engineering design of the geosynthetic components of the proposed cap system for the above referenced project. We understand Mark wishes to include this statement in the final Remedial Action Workplan submission to be made to NJDEP. Please review the paragraph below and respond if you have comments.

Certification

"Black & Veatch has designed the geosynthetic components of the cap system proposed for construction at the Ryerson Steel Site in accordance with industry standard design methodology. The geosynthetic cap system consists of, from bottom to top, a heavy duty protective non-woven geotextile, a 40 mil typical linear low density polyethylene (LLDPE) and a geosynthetic drainage net with a nonwoven geotextile heatbonded to each side.

Based upon our knowledge of the site, we certify that the proposed geosynthetic cap system, if installed under strict engineering control specified in the project specifications, will function in an appropriate manner by providing a physical barrier between the site subsurface contaminants and future site users. "

Upon completion of cap material installation, we will provide a similar certification regarding construction installation. At that time, warranties will also be available from the geomembrane manufacturer and installer. Please call me if I can be of further assistance.

Sincerely,
BLACK & VEATCH

David B. Walsh

David B. Walsh, P.E.
Project Engineer

cc: Mark London
Jim Wong, John Ponton

AS-Hudson/ryersn22.wp5
June 5, 1997

WAISN

NSF 54 - 1993

FLEXIBLE MEMBRANE LINERS

NSF *International* Standard

NSF 54 - 1993

NSF

TABLE 11. MATERIALS PROPERTIES
VERY LOW DENSITY POLYETHYLENE (VLDPE)

Property	Test Method	20	30	40	60
Thickness, mils minimum avg	ASTM D751 (as modified in Annex A)	20	30	40	60
Thickness, mils lowest individual	ASTM D751 (as modified in Annex A)	16	27	36	54
Minimum Tensile Properties	ASTM D638 (as modified in Annex A)				
Tensile Strength @ break lbs/in (lbs/sq in)		84	96	128	184
Elongation @ break[38] percent		625	625	625	625
2% Secant Modulus (max) lbs/sq in	ASTM D638	35000	35000	35000	35000
Tear Resistance lbs (lbs/in)	ASTM D1004	8	12	16	24
Low Temp Impact - deg C	ASTM D746	-60	-60	-60	-60
Dimensional Stability percent chg	ASTM D1204 (as modified in Annex A)	±3	±3	±3	±3
Puncture lbs (lbs/in)	FTMS 101 Method 2065	26	39	52	78
Carbon Black Content Percent Allowable Range	ASTM D1603	2-3	2-3	2-3	2-3
Carbon Black Dispersion Acceptable Levels	ASTM D3015 (as modified in Annex A)			A1,A2,B1	
	Factory Seam Requirements[39]				
Peel Strength lbs strength and lb or inches of elongation	ASTM D4437 (as modified in Annex A)	20 10	30 10	40 10	60 10
Shear Strength lbs strength and lb or inches of elongation	ASTM D4437 (as modified in Annex A)	22 14	33 14	44 14	66 14

MINIMUM PROPERTIES FOR STANDARD SMOOTH VFPE GEOMEMBRANES: GSE ULTRAFLEX®

Property	[1] Test Method	30 (0.75)	40 (1.0)	60 (1.5)	80 (2.0)	100 (2.5)
[2] minimum thickness [mil] average thickness [mil]	ASTM D 751, D 1593 or D 5199	27 30	36 40	54 60	72 80	90 100
density [g/cc]	ASTM D 792 (B) or D 1505	0.920	0.920	0.920	0.920	0.920
carbon black content [%]	ASTM D 1603	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0
carbon black dispersion	ASTM D 3015	A1, A2, B1	A1, A2, B1	A1, A2, B1	A1, A2, B1	A1, A2, B1
Tensile Properties: *(each direction)*	ASTM D 638 Type IV, 2 ipm NSP 54 modified					
tensile strength @ break [ppi]		122	160	243	324	405
elongation @ break [%]	(2.5" gauge length)	780	800	800	800	800
tear resistance [lb.]	ASTM D 1004	18	24	36	48	60
puncture resistance [lb.]	FTMS 101 Method 2065	40	55	80	110	135
ESCR [hours]	ASTM D 1693, B	1500	1500	1500	1500	1500
dimensional stability [% change]	ASTM D 1204 (1 hr. @ 100 °C)	± 2	± 2	± 2	± 2	± 2

[1] GSE utilizes test equipment and procedures which enable effective and economical confirmation that the product will conform to specifications based on the noted procedures. All procedures and values are subject to change without prior notification.

[2] Flat cast line can achieve, when necessary, ± 5% of nominal thickness except for ≤ 60 mil; co-extruded lines can achieve a range of -10% to +15% of nominal thickness. Specifications with more restrictive tolerances should be priced accordingly.

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DURA SEAL® LL GEOMEMBRANE
SPECIFICATIONS

40 mil (1.0 mm)

National Seal Company's DURA SEAL LL geomembranes are produced from virgin, first quality, high molecular weight resins and are manufactured specifically for containment in hydraulic structures. DURA SEAL LL geomembranes have been formulated to be resistant to chemicals, ultraviolet degradation, as well as leaching additives.

Refer to NSC's Manufacturing Quality Control Manual to determine test methods and frequencies used as a part of NSC's quality control program.

RESIN PROPERTIES	METHOD	UNITS	MINIMUM[1]	TYPICAL
Melt Flow Index[2]	ASTM D 1238	g/10 min	1.0	0.80
Resin Density[2]	ASTM D 1505	g/cm³	0.92	0.917

SHEET PROPERTIES	METHOD	UNITS	MINIMUM[1]	TYPICAL
Thickness	ASTM D 5199			
Average		mils	40.0	41.5
Individual (15 & 30.5)		mils	38.0	40.3
Individual (23)		mils	36.0	40.0
Density[2]	ASTM D 1505	g/cm³	0.935	0.938
Carbon Black Content	ASTM D 4218	percent	2.0	2.3
Carbon Black Disperaion	ASTM D 5596	rating	A1, A2, B1	A1
Tensile Properties	ASTM D 638			
100% Secant Modulus		psi	1500	1570
		ppi	60	65
Stress at Break		psi	3800	5850
		ppi	152	234
Strain at Break	2.0" gage or extensometer	percent	650	1015
	2.5" gage length (NSF)	percent	680	812
Dimensional Stability[2]	ASTM D 1204, NSF mod.	percent	3.0	1.1
Tear Resistance	ASTM D 1004	ppi	630	725
		lbs	25	30
Puncture Resistance	ASTM D 4833	ppi	1800	2145
		lbs	72	89

1 This value represents the minimum acceptable test value for a roll as tested according to NSC's Manufacturing Quality Control Manual. Individual test specimen values are not addressed in this specification except thickness.

2 Indicates Maximum Average Roll Value

DURA SEAL® LL GEOMEMBRANE
PHYSICAL PROPERTIES

40 mil (1.0 mm)

SHEET PROPERTIES	METHOD	UNITS	MINIMUM[1]	TYPICAL
Puncture Resistance	FTMS 101C, Method 2065	ppi lbs	1400 58	1630 78

SEAM PROPERTIES	METHOD	UNITS	MINIMUM[1]	TYPICAL
Shear Strength	ASTM D 4437, NSF mod.	psi ppi	1600 60	1700 71
Peel Strength (hot wedge fusion)	ASTM D 4437, NSF mod.	psi ppi	1325 53	1570 65
Peel Strength (fillet extrusion)	ASTM D 4437, NSF mod.	psi ppi	1135 45	1450 60

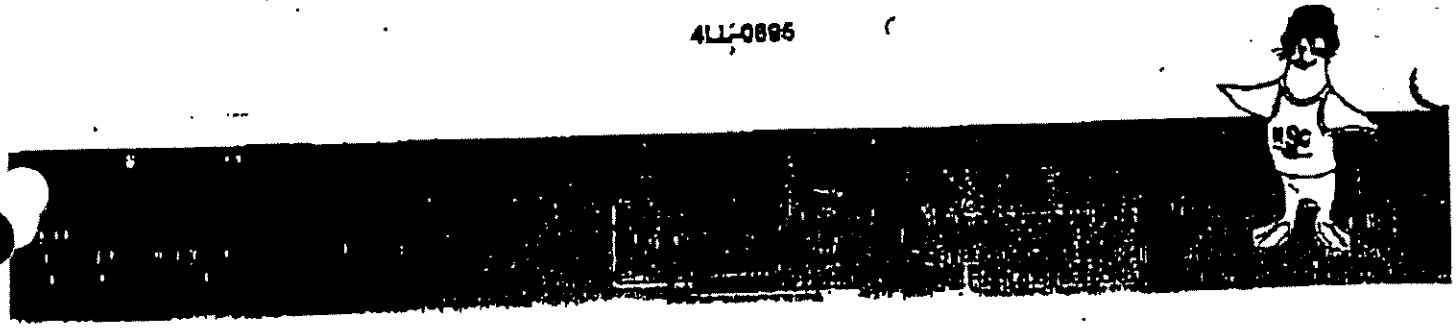
Seam testing is the responsibility of the installer and/or CQA personnel.

STANDARD ROLL WIDTHS

15 FT. - 23 FT. - 30.5 FT.

The information contained herein has been compiled by National Seal Company and is, to the best of our knowledge, true and accurate. All suggestions and recommendations are offered without guarantee. Final determination of suitability for use based on any information provided, is the sole responsibility of the user. There is no implied or expressed warranty of merchantability of fitness of the product for the contemplated use. NSC reserves the right to update the information contained herein in accordance with technological advances in the material properties.

4LL-0695



PRODUCT INFORMATION

PERMALON® PLY X-210®

- High density, cross-laminated polyethylene resists punctures and tears.
- UV stabilized to withstand prolonged exposure to sunlight.
- Ply X-210 is not prone to environmental stress-cracking (ESC) so it can endure repeated thermal expansion & contraction cycles.
- Meets ASTM standard D-3083 Soil Burial test performance requirements.

PHYSICAL PROPERTIES AND TYPICAL VALUES

PROPERTY		ASTM TEST METHOD	US VALUE	METRIC VALUE
THICKNESS		D-4801	20 MIL	.50 MM
WEIGHT		D-3776	68 LB/1000 FT²	33 KG/100 M²
			9.9 OZ/YD²	335 GM/M²
TENSILE STRENGTH	MD	D-882	66 LBF	294 N
	PSI		3660 PSI	25.2 MPA
	TD		58 LBF	258 N
	PSI		3170 PSI	21.9 MPA
TENSILE ELONGATION	MD	D-882	700 %	700 %
	TD		400 %	400 %
TONGUE TEAR	MD	D-751B	37.5 LBF	167 N
	TD		31.5 LBF	140 N
PPT RESISTANCE	MD	D-2582	48.2 LBF	214 N
	TD		44.3 LBF	197 N
TRAPEZOIDAL TEAR	MD	D-4533	62 LBF	276 N
	TD		77.3 LBF	344 N
DART IMPACT STRENGTH		D-1709	3.01 LBS	1.36 KG
PUNCTURE RESISTANCE		D-4833	42.4 LBS	189 N
COLD IMPACT STRENGTH		D-1709MOD	-80°F	-60°C
CARBON BLACK CONTENT		D-1603	>2.0 %	>2.0 %

The information provided herein is based upon data believed to be reliable. All testing is performed in accordance with ASTM standards and procedures. All values are typical and nominal and do not represent either minimum or maximum performance of the product. Although the information is accurate to the best of our knowledge and belief, no representation of warranty or guarantee is made as to the suitability or completeness of such information. Likewise, no representation of warranty or guarantee, express or implied, of merchantability, fitness or otherwise, is made as to product application for a particular use.
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Geomembrane Physical Properties
Ryerson Steel Site Cap

		Units	Dura Seal LL	Dura Seal HD	PLY X-210	GSE HD	GSE UltraFlex
Density		g/cm3 gm/m2	0.935	0.94	0.66 935	0.94	0.92
Carbon Black Content		%	2	2	2	2-3	2-3
Tensile Strength at Yield		ppi psi		88 2200		86	
Tensile Strength at Break	MD TD	psi ppi	3800 152	3800 152	3660 3170	162	160
Elongation at yield		%		13		13	
Strain at Break	MD TD	2" gage - % 2.5" gage - %	850 680	700 560	700 400	560	800
Dimensional Stability		%	3	2		2	2
Tear Resistance	MD TD	ppi lbs ppi	630 25	750 30	744 827.6	30	24
Puncture Resistance		ppi lbs	1700 68	1800 72	42.4	52	55
ESCR		hours		200		1500	1500

40mil LLDPE

Permalon

40 mil LLDPE

NONWOVEN GEOTEXTILES – ENGLISH VALUES

PROPERTY	TEST METHOD	UNITS	VALUE	311	351	401	451	501	601	701	801	1001	1201	1601
MECHANICAL														
Grab Tensile Strength	ASTM D-4632	lbs	TYPICAL	100	105	115	135	155	170	205	230	275	340	425
			MARV	80	90	100	120	135	150	180	200	250	300	380
Grab Elongation	ASTM D-4632	%	TYPICAL	55	56	56	58	56	56	60	60	60	60	65
			MARV	45	50	50	50	50	50	50	50	50	50	50
Puncture Strength	ASTM D-4833	lbs	TYPICAL	65	70	80	90	105	120	135	155	185	220	290
			MARV	50	55	65	70	85	95	110	130	160	180	240
Mullen Burst	ASTM D-3786	psi	TYPICAL	220	240	265	290	325	385	425	475	590	680	950
			MARV	165	185	225	240	275	325	350	400	510	600	800
Trapezoidal Tear	ASTM D-4533	lbs	TYPICAL	40	45	55	60	68	70	88	98	115	130	165
			MARV	30	35	45	50	57	60	75	85	100	115	145
HYDRAULIC														
Apparent Opening Size (AOS)	ASTM D-4751	US Sieve	TYPICAL	100	100	100	100	100	100	100	100	140	140	140
			MARV	70	70	70	70	70	70	70	80	100	100	100
Permittivity	ASTM D-4491	sec^{-1}	TYPICAL	2.50	2.50	2.50	1.90	1.80	1.70	1.80	1.90	1.60	1.50	1.00
			MARV	2.00	2.00	2.00	1.50	1.40	1.30	1.50	1.50	1.20	1.00	0.70
Permeability	ASTM D-4491	cm/sec	TYPICAL	0.28	0.31	0.34	0.29	0.29	0.32	0.40	0.48	0.40	0.43	0.39
			MARV	0.22	0.25	0.22	0.22	0.23	0.24	0.34	0.38	0.30	0.29	0.27
Water Flow Rate	ASTM D-4491	gpm/ft²	TYPICAL	130	130	160	140	130	130	130	130	100	90	65
			MARV	110	110	140	120	115	110	110	110	85	75	50
ENDURANCE														
UV Resistance	ASTM D-4355	% Retained @ 500 hrs	MARV	70	70	70	70	70	70	70	70	70	70	70
STANDARD PACKAGING														
Roll Width	Measured	feet	TYPICAL	12.5/15.0	12.5/15.0	12.5/15.0	12.5/15.0	12.5/15.0	12.5/15.0	12.5/15.0	15.0	15.0	15.0	15.0
Roll Length	Measured	feet	TYPICAL	360	360	360	360	360	300	300	300	300	300	300
Roll Area	Calculated	yd²	TYPICAL	500/600	500/600	500/600	500/600	500/600	416.67 /500	416.67 /500	500	500	500	500

NOTES

- Values reported in weaker principle direction
- "MARV" indicates minimum average roll value calculated as the typical minus two standard deviations. Statistically, it yields a 97.7% degree of confidence that any sample taken during quality assurance testing will exceed the value reported

SYNTHETIC INDUSTRIES

Chattanooga, Tennessee USA
(423) 899-0444 ▲ (423) 899-7619 (Fax)

TENDRAIN 70 - 2

DOUBLE SIDED GEOCOMPOSITE
GEOTEXTILE - GEONET - GEOTEXTILE

The drainage geocomposite is comprised of a tri-planer geonet structure consisting of thick supporting ribs with diagonally placed top and bottom ribs and with a thermally bonded, non-woven geotextile on both sides. The product is be capable of providing high flow rates in a soil environment under high normal loads and will have properties conforming with the values and test methods listed below.

PROPERTIES	TEST METHOD	UNIT	VALUE	Qualifier
PROPERTIES OF GEONET CORE				
Tensile Strength (MD)	ASTM D4595	lb/ft (kN/m)	900 (13.1)	a, Note 1
Compression Behavior % Retained @ 10,000 psf 25,000 psf 40,000 psf	ASTM D1621	 % % %	 75 65 50	 a, Note 2 a, Note 2 a, Note 2
Resin Density	ASTM D1505	g/cm³	0.940	a
Resin Melt Index	ASTM D1238	g/10 min.	1.0	d
Carbon Black Content	ASTM D4218	%	2.0	a
Thickness	ASTM D5199	mils (mm)	275 (7.0)	c, Note 3
PROPERTIES OF GEOTEXTILE				
AOS	ASTM D4751	US Sieve (mm)	70 (0.21)	b
Permitivity	ASTM D4491	sec⁻¹	1.8	b
Permeability	ASTM D4491	cm/sec	0.2	b
Grab Tensile Strength	ASTM D4632	lbs (kN)	150 (0.67)	b
PROPERTIES OF GEOCOMPOSITE ***Geotextile - Geonet - Geotextile***				
Tensile Strength (MD)	ASTM D4595	lb/ft (kN/m)	2360 (34.7)	a
Thickness	ASTM D5199	mils (mm)	325 (8.9)	a
Ply Adhesion	ASTM D413	lbs/in (g/cm)	1 (178) Polypropylene Geotextile	c, Note 4

HYDRAULIC BEHAVIOR IN SOIL

Flow Rate/Unit Width (gal./min./ft.) ASTM D 4716

Hydraulic Gradient/Load:	1,000 psf	8,000 psf	15,000 psf	25,000 psf	
i = 0.10	1.9	1.8	1.0	0.5	Notes 5,6
i = 0.20	2.7	2.6	1.9	0.7	Notes 5,6
i = 0.33	3.6	3.3	2.3	1.0	Notes 5,6
i = 0.50	4.7	4.2	3.0	1.2	Notes 5,6
i = 0.75	5.8	5.3	3.8	1.6	Notes 5,6
i = 1.00	6.2	6.0	4.1	1.7	

Qualifiers: a = Typical Value b = Minimum Average Roll Value
c = Minimum Value d = Maximum Value

NOTES:

1. Tensile Properties tested by manufacturer every 40,000 square feet of product as per ASTM D4595 with a specimen width of 8.0 in. and a cross-head speed of 0.4 in./min. in machine direction.

2. Compression behavior tested by manufacturer every 40,000 square feet of product as per ASTM

Tenax Corporation
4800 East Monument Street
Baltimore, Maryland 21205
(800)356-8495

081698

TEX-NET® SPECIFICATIONS

GEOCOMPOSITE PROPERTIES

			TN3002/1120	TN3002/1125
Transmissivity[1] (15,000 psf)	ASTM D 4716	m^2/sec	5×10^{-5} 1.5×10^{-4} (typ.)	3×10^{-5} 1×10^{-4} (typ.)
Ply Adhesion	ASTM D 413 or F 904	lb/in	2.0	2.0
Tensile Strength (MD)	ASTM D 4632	lbs	535	580

COMPONENT PROPERTIES[3]

Density	ASTM D 1505	g/cm^3	0.94
Carbon Black Content	ASTM D 4218 or ASTM D 1603	%	2.0
Thickness	ASTM D 5199	inches	0.200
Mass Per Unit Area	ASTM D 5261	lbs/ft^2	0.162
Transmissivity[1]	ASTM D 4716	m^2/sec	1×10^{-3} @15,000 psf
Tensile Strength	ASTM D 5035	lbs/in	45

			1120	1125
Fabric Weight	ASTM D 5261	oz/yd^2	5.7	7.1
Thickness	ASTM D 5199	mils	75	95
Grab Strength	ASTM D 4632	lbs	160	210
Water Flow Rate	ASTM D 4491	gpm/ft^2	130	110
AOS	ASTM D 4751	Sieve Size	70	70
		mm	0.210	0.210

1. Measured using water @ 20°C (68°F) with a gradient of one, between two steel plates, after one hour. Value may vary, based on dimensions of the transmissivity specimen and specific laboratory.
2. These values represent minimum acceptable test values for a roll as tested according to NSC/FSI's Manufacturing Quality Control Manual. Individual test specimen values are not addressed in this specification.
3. Component properties are tested prior to the lamination process. They cannot be tested on the final product.

1/97 CN

NSC TREVIRA SPUNBOND FSI FLUID SYSTEMS

1245 Corporate Blvd. • Suite 300 • Aurora, IL 60504
NSC (630) 898-1161 • (800) 323-3820 • Fax: (630) 898-3461 / FSI (800) 340-9107 • Fax: (630) 898-1179

HELLER
ENTERPRISES, INC.

525 RIVER ROAD, EDGEWATER, NEW JERSEY 07020
PHONE 201-945-9555 • FAX 201-945-8333

December 17, 1997

VIA: FAX AND MAIL

Mr. Lou March
March Associates
1599 Hamburg Turnpike
Wayne, New Jersey 07470

RE: 440 COMMONS
JERSEY CITY, NEW JERSEY

Dear Lou:

I understand that due to the weather condition the ability to pour a proper slab is hindered and it is likely to heave and/or spauld. For this reason you should complete installation of the foundation and preparation of the slab subbase and hold off with the installation of the slab. We will not direct you to continue until the conditions improve or the building is enclosed and temporary heat can be utilized.

Also, as you know the site has been capped with a geomembrane which is located approximately 3 feet below the slab subgrade. No excavation for any reason should take place and we should be extremely careful while we continue with the construction of the structure (masonry, steel, roofing, etc.)

Should you have any questions or require any additional information pertaining to this matter, please feel free to call me.

Sincerely,

Heller Jersey City, L.L.C.
By: Heller Management Corp.

Richard A. LaBarbiera, P.E.
Project Engineer

RAL/es
cc: Scott D. Heller, Esq.
Keith Michels
Mark London/Enviro Sciences ✓

facsimile
TRANSMITTAL

to: Mark London
fax #: 201 398-8037
re: REMEDIAL ACTION REPORT; RYERSON/HOME DEPOT
date: December 11, 1997
pages: 5 page(s) total, including this cover sheet

Mark,

As requested, I have prepared a write-up on the geomembrane component of construction for inclusion in your Remedial Action Report. I hope it meets your needs. I have also prepared a draft construction certification letter for your report. I will issue a final certification letter upon completion of construction.

Allied are also receiving review copies of these documents. If Allied's review results in changes, I will inform you as needed.

Please let me know if I can be of further assistance.

DWalsh

cc: E. Walerko
J. Wong

From the desk of...

David B. Walsh, P.E.
Project Manager
Black & Veatch Special Projects Corp
601 Walnut Street
Philadelphia, Pennsylvania 19106-3307

tel: 215 928-2225
fax: 215 928-1780

ee-fax5.wp5

Remedial Action Report
for
Ryerson Steel/Home Depot
Route 440, Jersey City, New Jersey.

The following paragraph's have been prepared at the request of Mark London of Enviro-Science, Inc. for inclusion in the Remedial Action Report (RAR) for the above reference site. These paragraphs describe the installation, seaming and quality assurance/quality control (QA/QC) programs employed during construction of the geomembrane component of the remedial cap construction.

Geomembrane Installation

A 40-mil Linear Low Density Polyethylene (LLDPE) geomembrane was deployed across the entire site. The geomembrane was placed on a carefully prepared subgrade, consisting of a non-woven geotextile fabric resting on existing smooth asphalt, smooth concrete or select soil, with a maximum particle size no larger than 2 inches. Following subgrade preparation, and immediately prior to geomembrane deployment, the receiving subgrade was inspected by the installation contractor and approved for receiving geomembrane materials. As the geomembrane sheets were rolled out across the subgrade they were carefully inspected for visible damage resulting from transportation or storage.

Geomembrane Seaming

The geomembrane rolls used on the project were approximately 23 feet in width and 750 feet in length. Rolls were placed with adjacent sheets overlapping a minimum of 3 inch. At each overlap, adjacent sheets were welded together using either extrusion or fusion welding methods. Extrusion welding was only performed in areas where fusion welding equipment could not operate. Prior to welding, each overlap was inspected to verify that the materials were clean, dry and in suitable condition for welding to proceed. In addition, prior to performing production seaming, the contractor performed test welds to verify welding procedures and methods were appropriate.

Extrusion seams were made by overlapping adjacent sheets a minimum of 3 inches and extruding a ribbon of hot fusion-joining resin no less than three-quarter inch in width between the overlapped sheets or over the seams between the overlapped sheets.

Fusion field seams were made by overlapping adjacent sheets a minimum of 3 inches and forming a double welded seam separated by an air space approximately 0.375 inch in width. Fusion welded seams were produced by a double hot shoe welder capable of maintaining a recordable temperature determined by onsite conditions which did not vary more than 10°C from the target temperature.

Geomembrane QA/QC Weld Testing Program

All geomembrane overlaps were subjected to the quality control and quality assurance program described below.

The Quality Control (QC) program performed by the contractor included both non-destructive and destructive testing of geomembrane seams and was performed to confirm geomembrane seam quality. A Quality Assurance (QA) program was conducted by the Engineer to confirm results of the contractor's QC program and verify conformance with the project specifications.

Non-destructive testing was performed on 100% of geomembrane seams. Destructive testing was performed on geomembrane seams at a frequency of one test per 400 linear feet of seam. Details of both non-destructive and destructive testing programs are provided below.

Non-Destructive Seam Testing Program
One of the following three methods was used by the contractor in complying with the non-destructive testing requirements of the project.

Non-destructive Vacuum Testing. Continuous vacuum box testing was performed on extrusion welded seams and repairs. The vacuum box assembly consisted of a rigid housing, a transparent viewing window, a soft neoprene gasket, a port hole or valve assembly, and a gauge to indicate chamber pressure. A soapy solution was applied to the geomembrane seam over an area of approximately 12 inches by 48 inches. For a period of not less than 30 seconds, the seam was examined by viewing through the transparent window. If no bubbles appeared, the seam passed this non-destructive test. If bubbles did appear, the area failed the test and was repaired and retested until satisfactory seams were demonstrated.

Non-Destructive Spark Testing. Spark testing was performed on extrusion welded seams whose configuration would not permit testing by the vacuum box method. Spark testing was performed by embedding a copper wire within the bead of extrudate being applied to the overlapping geomembrane materials. Upon completion of the extrusion welding process, an electrical source was applied to the exposed end of the embedded copper wire and the continuity of the weld was tested by passing and electrical "wand" directly above the weld. If the weld was not continuous, a spark is observed to jump between the embedded wire and the electrical "wand". When observed the discontinuity was repaired and retested until satisfactory seams are demonstrated.

Non-destructive Air Pressure Testing. Air pressure testing was performed on all double fusion welded seams. All 40 mil double fusion seams were tested at 30 psi over the maximum uninterrupted panel seam length for 5 minutes. If the pressure drop in the seam exceeded 3 p.s.i., or if the pressure failed to stabilize, the leak was located, repaired and retested until satisfactory seams were demonstrated.

Destructive Seam Testing Program

Destructive Testing. Destructive testing was performed on samples of production seams to confirm seam quality. A sample coupon of production seams approximately 36 inches long by 12 inches wide, was taken every 400 feet of production seam. The area from which the sample was removed was repaired using an extrusion welded patch and the resulting seam was non-destructively tested.

From the coupon, a sample was sent to the contractor's quality control laboratory for shear and peel testing. A total of five shear and five peel tests a re performed on each coupon. The minimum seam strength values required for all samples obtained from fusion and extrusion welded seams was 40 pounds per inch for seams tested in peel, and 44 pounds per inch for seams tested in shear. Passing destructive test results were obtained for all seams tested.

APPENDIX D

DEED NOTICES

APPENDIX D-1

Deed Notice for Main Site (Block 26201, Lot 1.01)

20150209010011240 1/29
02/09/2015 10:14:20 AM DEED
Bk: 9021 Pg: 723
Pamela E. Gardner
Hudson County, Register of Deeds
Receipt No. 98477B

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: Russell Bershad D.K.
[Signature]
Russell Bershad
[Print name below signature]

Recorded by: _____
[Signature, Officer of County Recording Office]
_____
[Print name below signature]

20150507010037620 1/29
05/07/2015 01:32:36 PM DEED
Bk: 9037 Pg: 7
Pamela E. Gardner
Hudson County, Register of Deeds
Receipt No. 101355B

DEED NOTICE

This Deed Notice is made as of the ____ day of _____, 2015, by Jersey City Fields, L.L.C., 7412 Stonegate Blvd., Parkland, Florida 33076 (together with its successors and assigns, collectively "Owner").

1. THE PROPERTY. Jersey City Fields, L.L.C. is the owner in fee simple of certain real property designated as Block 26101, Lot 1.01, on the tax map of the City of Jersey City, Hudson County; the New Jersey Department of Environmental Protection Program (NJDEP) Interest Number (Preferred ID) for the contaminated site which includes this property is 008809; 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 NJDEP has approved this Deed Notice as an institutional control for the Property, which is part of the remediation of the Property.

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. G. Heller Enterprises, Inc., prior owner of the Property, in cooperation with Honeywell International Inc (Honeywell), remediated contaminated soil at the Property, such that soil contamination remains in certain areas of the Property 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. The remedial actions were documented in a Remedial

This Deed Notice is being re-recorded to replace Exhibit B1-A.

25 Pgs
Bk 9037 — 7

Action Report dated February 1998, and the New Jersey Department of Environmental Protection issued a No Further Action Letter for soils dated March 27, 1998. 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. (NOTE: An institutional control for groundwater referred to as a Classification Exception Area [CEA] was approved by the NJDEP on February 16, 2012; CEA information can be obtained from the NJDEP via Open Public Records Act records request.)

4. CONSIDERATION. In accordance with the remedial action for 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 remedial action 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, operators, tenants, lessees, and contractors and workers intending to conduct invasive work within the Restricted Area.

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.

5D. WORKER PROTECTION PLAN. Honeywell has prepared a Worker Protection Plan for use by the owner, lessee and/or operators for the protection of workers who may be potentially exposed to chromium-impacted soils or groundwater in conjunction with utility or other ground intrusive work on the Property; the Worker Protection Plan identifies health and

safety requirements for the protection of personnel and contractors who may perform ground intrusive activities (e.g., digging, drilling, excavation) that may disturb existing engineering controls and provides a basis for worker awareness to inform workers of potential hazards associated with chromium-impacted media. The Owner shall make the Worker Protection Plan available to operators, tenants, contractors and/or utility workers intending to conduct invasive work within the Restricted Area to prevent unauthorized disturbance of engineering controls and potential exposure to contaminants.

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, of the precautions necessary to minimize potential human exposure to contaminants, and, of the Worker Protection Plan that must be followed.

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; and notifies Honeywell (by calling 855-727-2658) and the Owner at least seventy-two (72) hours before 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) Follows the Worker Protection Plan, and, all applicable worker health and safety laws and regulations during the alteration, improvement, or disturbance, and during the restoration;

(D) Takes appropriate measures so 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 and then notifies Honeywell by calling 855-727-2658 and the Owner;

ii. If applicable, 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 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 Hudson County Register of Deeds 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;

ii. Exhibit A-2: Metes and Bounds Description - A tax map of lots and blocks as wells 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, 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 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) (Data not available electronically; it is provided on the figures presented as Exhibits B-2A 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) (Locations shown on Exhibit B-2A through F);

(C) Sample elevation based upon mean sea level (Sample elevations are not available based on information provided by historic reports. Sample depth intervals were provided however, the ground surface elevation has changed due to the implemented remedial action and development of the property);

(D) Name and chemical abstract service registry number of each contaminant with a concentration that exceeds the unrestricted use standard (CAS Numbers are provided on Exhibits B-2A through F);

(E) The restricted and unrestricted use standards for each contaminant in the table; and (applicable standards for each contaminant are provided on Exhibits B-2A through F)

(F) The remaining concentration of each contaminant at each sample location at each elevation (concentrations are provided on Exhibits B-2A through F).

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: Asphalt Pavement / Geomembrane Liner Cap: Exhibit C-2 includes a narrative description of the Asphalt Pavement / Geomembrane Liner 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.

iii. Exhibit C-3: Concrete / Geomembrane Liner Cap: Exhibit C-3 includes a narrative description of the Concrete / Geomembrane Liner 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.

iv. Exhibit C-4: Building Concrete Slab / Geomembrane Liner Cap: Exhibit C-4 includes a narrative description of the Building Concrete Slab / Geomembrane Liner 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.

iv. Exhibit C-5: Vegetative / Geomembrane Liner Cap: Exhibit C-5 includes a narrative description of the Vegetative / Geomembrane Liner 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.

v. Exhibit C-6: Asphalt Pavement Cap: Exhibit C-6 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.

13. SIGNATURES. IN WITNESS WHEREOF, Owner has executed this Deed Notice as of the date first written above.

ATTEST: Jersey City Fields, LLC

Margaret L Caracofe By Steven Fields

Margaret L Caracofe Steven Fields - Managing Member of Fields-Realty, the Manager of Jersey City Fields, LLC

[Print name and title] [Signature]

STATE OF NEW JERSEY SS.:
COUNTY OF HUDSON

I certify that on 1/14, 2015, [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 Jersey City Fields, 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.

Kim B. Fields

[Signature]

Kim B. Fields

[Print name and title of attesting witness]

Signed and sworn before me on Jan. 14, 2015

Margaret L Caracofe, Notary Public

Margaret L Caracofe

[Print name and title]

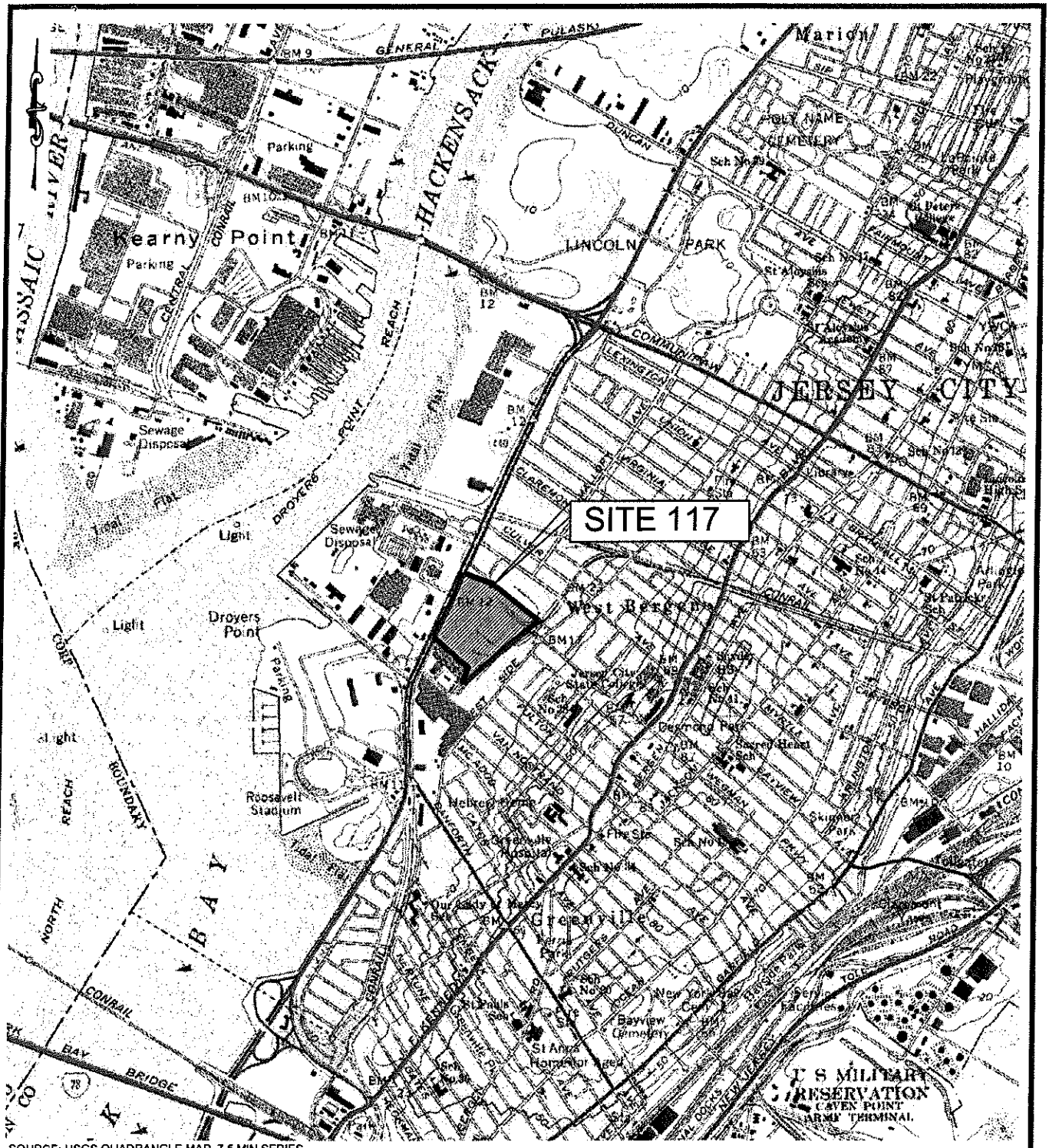
MARGARET L CARACOFE
Notary Public - State of Florida
My Comm. Expires Jan 14, 2017
Commission # EE 864144
Bonded Through National Notary Assn.

Exhibit A

A-1: Vicinity Map

A-2A: Metes and Bounds Description
A-2B: Tax Map of Lots and Blocks

A-3: Property Map



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.: 3480050361 DRAWING: 3480050136-6100-A1VM-0000		amec	**EXHIBIT A-1** VICINITY MAP DEED NOTICE BLOCK 26101, LOT 1.01 SA 5 - SITE 117 FORMER RYERSON STEEL JERSEY CITY, NEW JERSEY
PREPARED/DATE: STR 12/20/12	CHECKED/DATE: CMR 12/28/12	ENVIRONMENT & INFRASTRUCTURE 200 AMERICAN METRO BLVD, SUITE 113 HAMILTON, NEW JERSEY 08619	

FILE: P:\CAD\NJ\NEWELL\JERSEY CITY\SA 5\SITE 117 THE HOME DEPOT\3480050361\6100\810002\DURANT DRAWINGS\3480050136-6100-A1VM-0000.DWG, DATE: 03/25/2013 11:27:24AM Layout: lo: 1.01

Exhibit A-2A

Metes and Bounds Description

All that certain lot, tract or parcel of land situate, lying and being in the City of Jersey City, in the County of Hudson and the State of New Jersey, designated as Proposed Lot 1.01 as shown on a map entitled "Minor Subdivision Plat for Bayfront Redevelopment, LLC, Lot 1 Block 26101 (Formerly Block 1285.05), City of Jersey City, Hudson County, New Jersey" prepared by Maser Consulting, P.A. dated September 9, 2011, last revised April 2, 2012, being a portion of Lot 1, Block 26101 (former block 1285.05) as shown on the Official Tax Map for the City of Jersey City, and being more particularly bounded and described as follows, to wit:

BEGINNING at the first corner of lands described in a deed from DDR Southeast Jersey City, L.L.C., to Jersey City Fields, LLC, dated September 12, 2008 and recorded in the Hudson County Clerk's Office on September 18, 2008 in deed book 8611, page 257; said corner being located the following two (2) courses from a stone monument in the westerly sideline of West Side Avenue, distant 591.77 feet northerly from the northerly line of Woodlawn Avenue, projected Northwestwardly, as described therein:

A. **N 49° 06' 18" W 313.37 feet**; thence-
B. **S 52° 35' 42" W 51.06 feet**; to the True Point of **BEGINNING**, and running; thence-

Along the outside line of the aforementioned Lot 1, the following nine (9) courses:

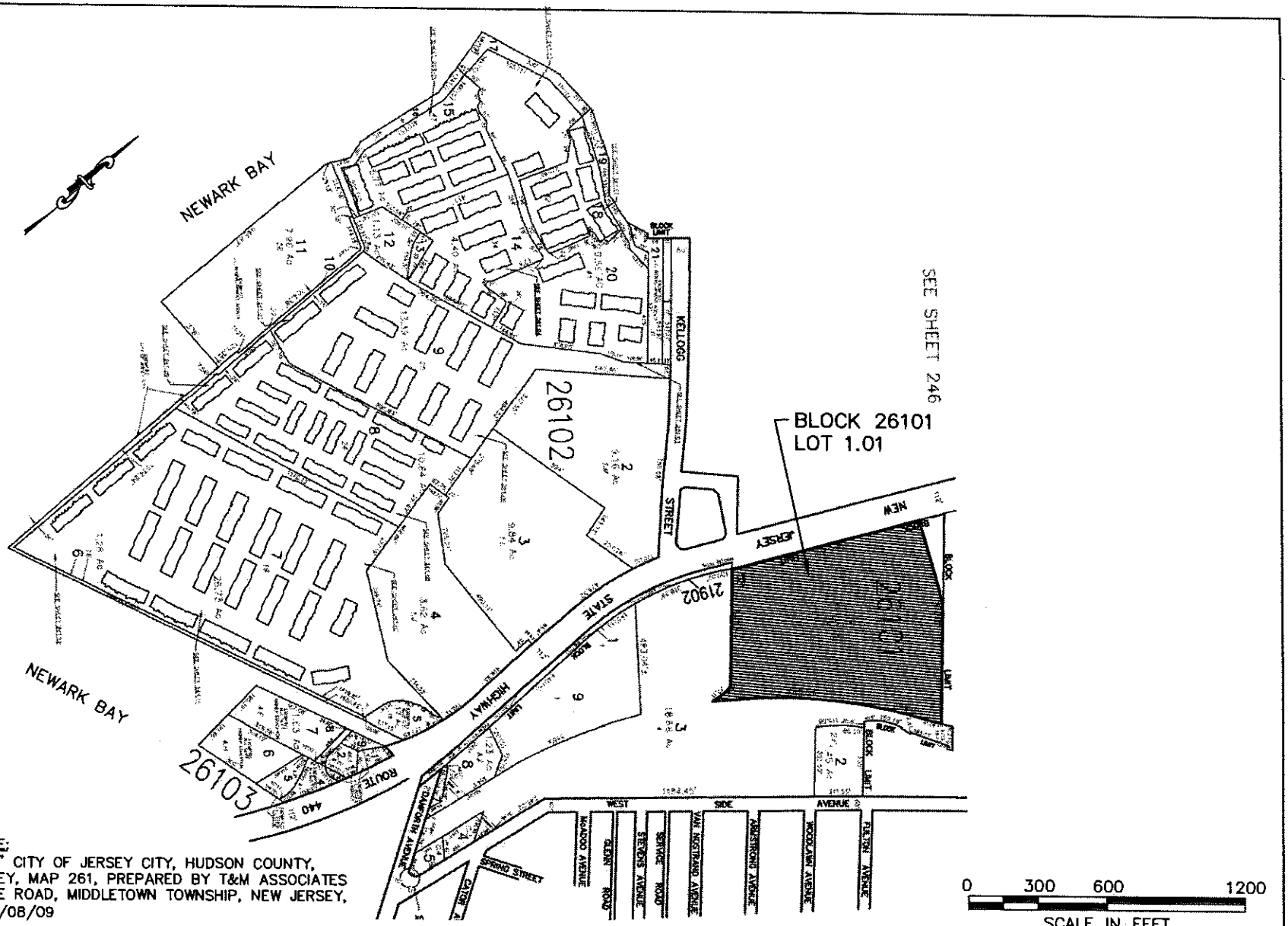
1. **S 52° 35' 42" W 346.87 feet**, southwestwardly along the westerly line of the former West Side Connecting Railroad, to a point of non-tangent curvature; thence –
2. Along the same, on a non-tangent arc to the left having a radius of **1960.00 feet,** an arc length of **26.80 feet**, (central angle **00 ° 47' 00"**) said arc being connected by a chord bearing **S 52° 24' 50" W** a chord distance of **26.80 feet**; thence-
3. **S 85° 26' 02" W 34.46 feet**; thence –
4. **S 49° 06' 18" E 19.50 feet**; thence –
5. Along the same, on a non-tangent arc to the left having a radius of **1960.00 feet,** an arc length of **655.11 feet**, (central angle **19 ° 09' 02"**) said arc being connected by a chord bearing **S 41° 42' 58" W** a chord distance of **652.07 feet**; thence –
6. **N 21° 31' 18" E 77.11 feet**; thence –
7. **N 13° 28' 10" E 28.00 feet**; thence –
8. **N 12° 32' 29" E 24.91 feet**; thence –
9. **N 49° 06' 18" W 510.83 feet**; to the easterly line of Lot 1, Block 21902 lands now or formerly of Bayfront Redevelopment LLC, as shown on the aforementioned minor subdivision plat, said lands also being lands formerly of the Morris Canal Banking Company as recited in the aforementioned deed book 8611, page 262; thence–

Along said easterly line, the same being courses two (2), three (3), and four (4), as described in said deed, reversed, the following three (3) courses:

10. **N 24° 46' 42" E 757.49 feet**, thence –
11. **S 49° 06' 18" E 5.21 feet**; thence –
12. **N 24° 46' 42" E 102.45 feet**; to the proposed subdivision line as laid down on the aforementioned minor subdivision plat; thence –
13. **S 68° 19' 24" E 214.57 feet**; along said proposed subdivision line, to a point of curvature; thence–

14. Along the same, on an arc to the right having a radius of **470.00 feet,** an arc length of **157.65 feet,** (central angle **19 ° 13' 05"**) said arc being connected by a chord bearing **S 58° 42' 51" E** a chord distance of **156.91 feet**; to the intersection of the same with the aforementioned outside line of Lot 1, Block 26101; thence –
15. **S 49° 06' 18" E 527.02 feet**; along said outside line, to the Point and Place of **BEGINNING**.

CONTAINING: 637,677 square feet / 14.639 acres of land more or less.



REFERENCE:
"TAX MAP" CITY OF JERSEY CITY, HUDSON COUNTY, NEW JERSEY, MAP 261, PREPARED BY T&M ASSOCIATES 11 TINDALE ROAD, MIDDLETOWN TOWNSHIP, NEW JERSEY, DATED 05/08/09

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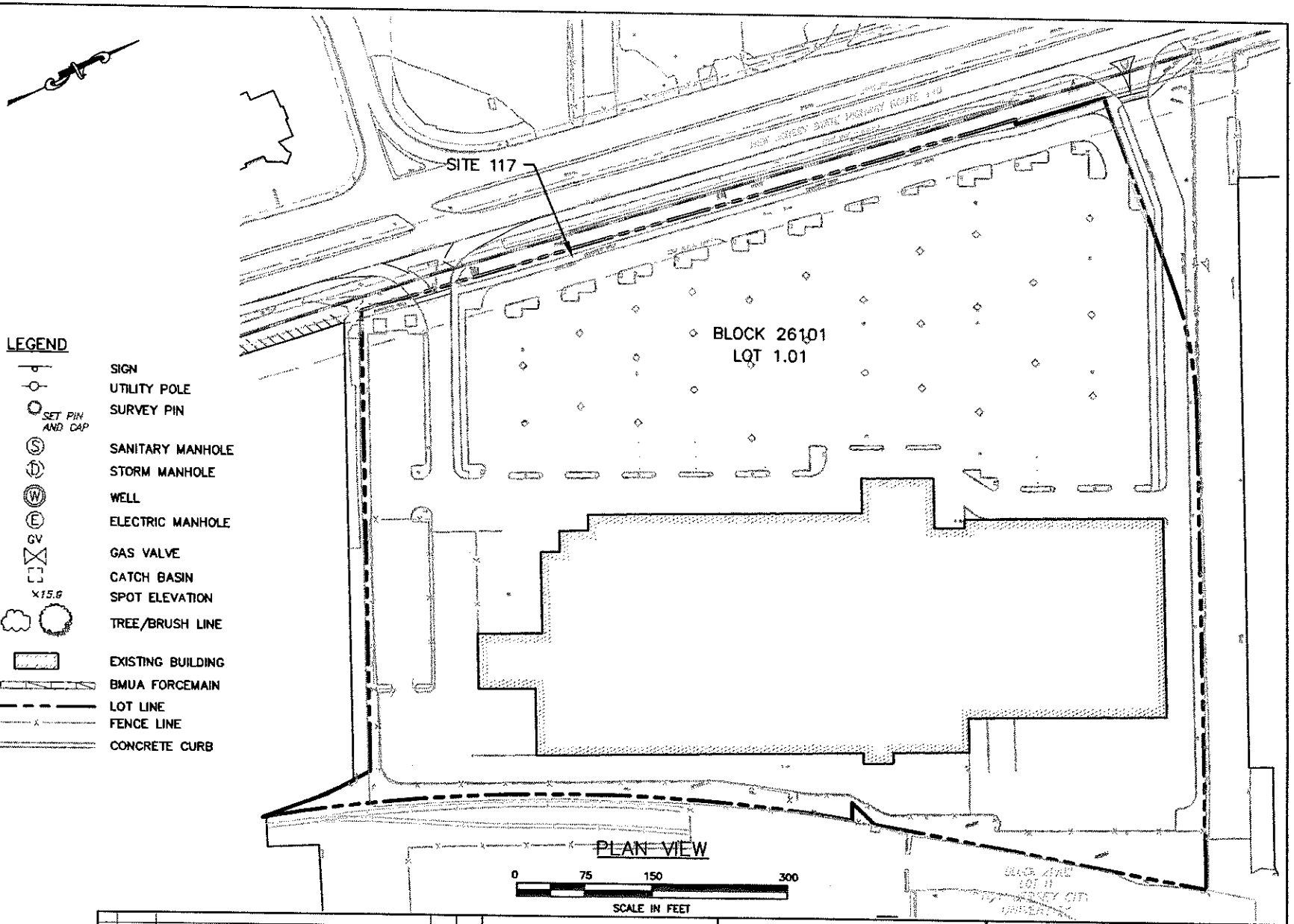
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PREPARED/DATE: STR 02/15/13
CHECKED/DATE: US 02/18/13

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

EXHIBIT A-2B
TAX MAP
BLOCK 26101, LOT 1.01
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

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DRAWING: 3480050136-6100-A3PM-0000

PREPARED/DATE: STR 02/19/13
CHECKED/DATE: US 02/19/13

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

EXHIBIT A-3
PROPERTY MAP
BLOCK 26101, LOT 1.01
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

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Exhibit B

Exhibit B-1A: Restricted Areas and Engineering Control Location Map

Exhibit B-1B: Engineering Control As-Built Diagrams

Exhibit B-2A: Restricted Area Map and Data Table - Total and Hexavalent Chromium (1-4')

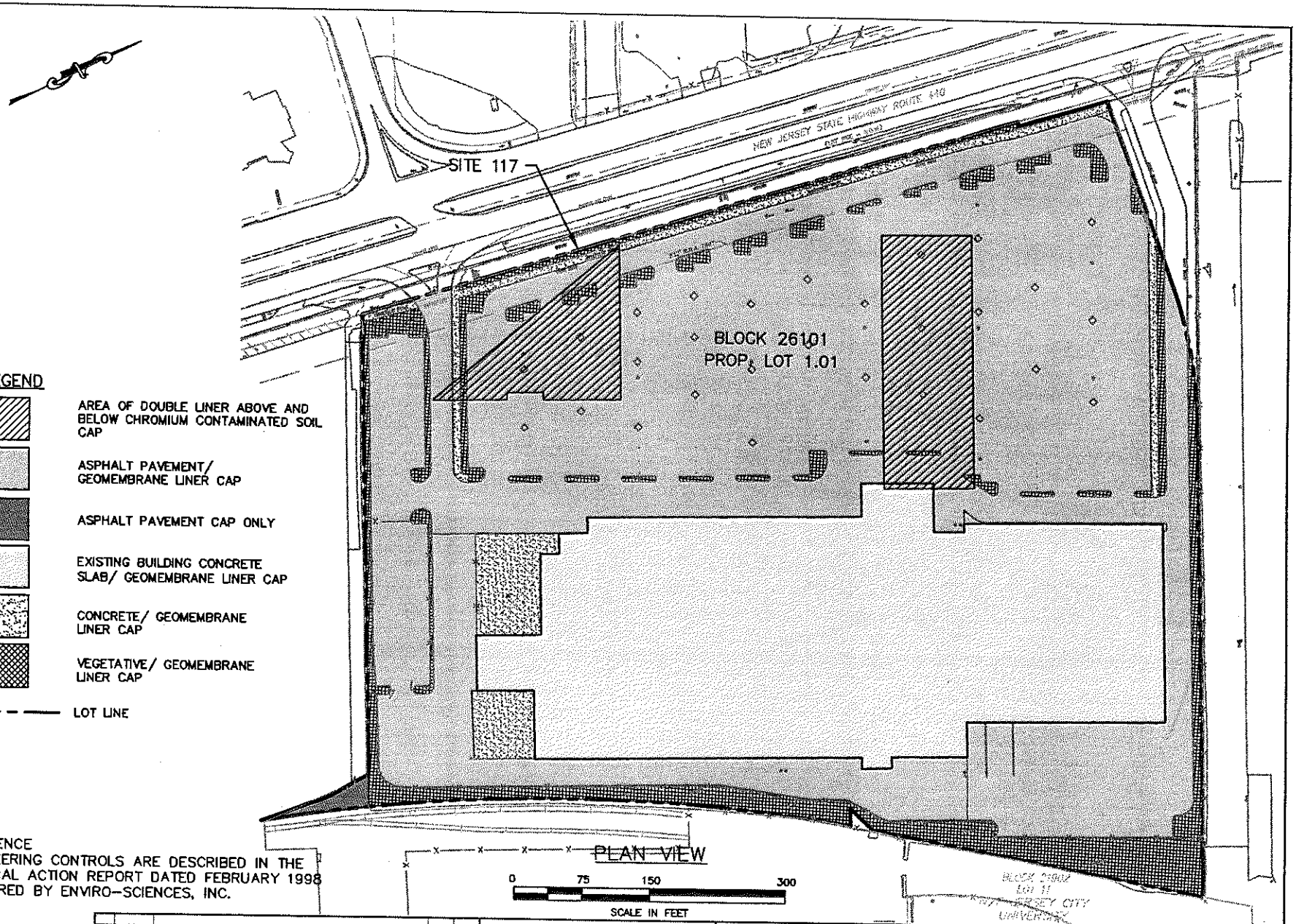
Exhibit B-2B: Restricted Area Map and Data Table - Total and Hexavalent Chromium (4-8')

Exhibit B-2C: Restricted Area Map and Data Table - Total and Hexavalent Chromium (8-12')

Exhibit B-2D: Restricted Area Map and Data Table - Total and Hexavalent Chromium (>12')

Exhibit B-2E: Restricted Area Map and Data Table - PP Metals & Vanadium Concentrations

Exhibit B-2F: Restricted Area Map and Data Table - SVOC Concentrations



REFERENCE
ENGINEERING CONTROLS ARE DESCRIBED IN THE REMEDIAL ACTION REPORT DATED FEBRUARY 1998 PREPARED BY ENVIRO-SCIENCES, INC.

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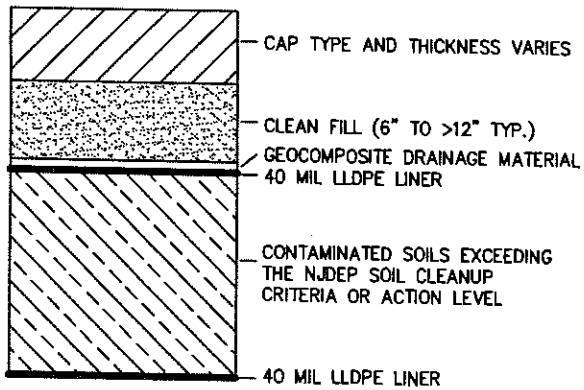
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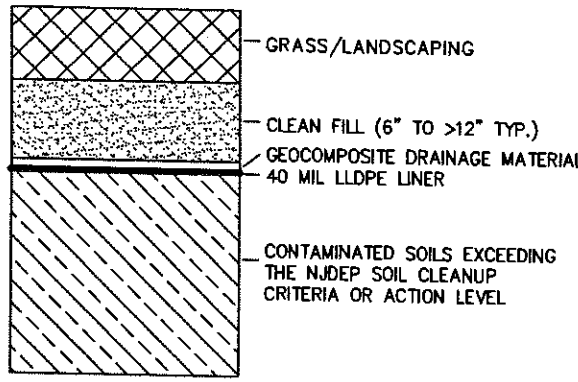
amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

EXHIBIT B-1A
RESTRICTED AREAS AND ENGINEERING CONTROL LOCATION MAP
BLOCK 26101, LOT 1.01
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

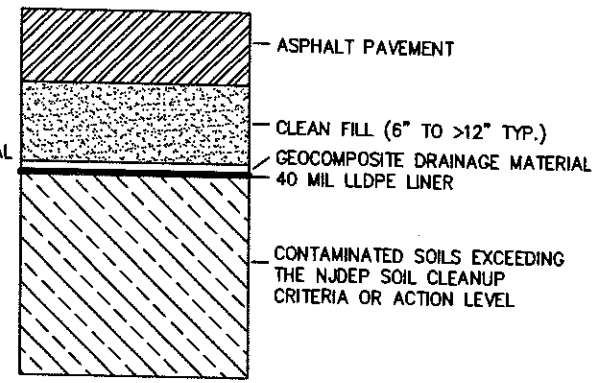
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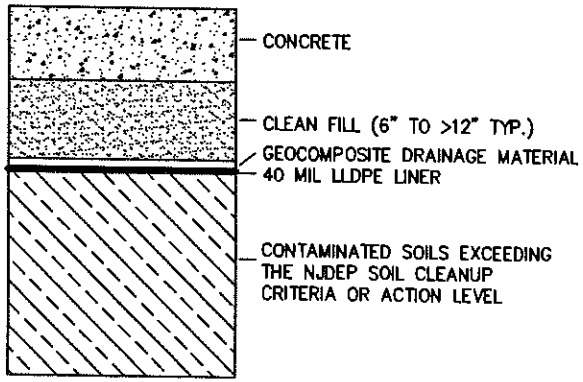
DOUBLE LINER ABOVE AND BELOW CONTAMINATED SOIL CAP



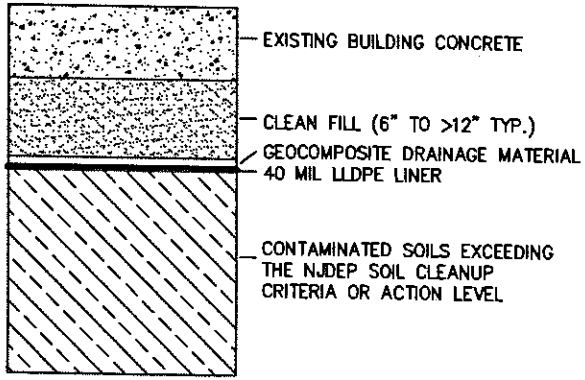
VEGETATIVE/GEOMEMBRANE LINER CAP



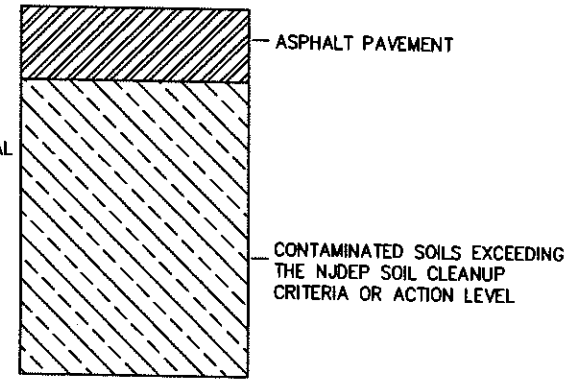
ASPHALT PAVEMENT/GEOMEMBRANE LINER CAP



CONCRETE/GEOMEMBRANE LINER CAP



EXISTING BUILDING CONCRETE SLAB/GEOMEMBRANE LINER CAP



ASPHALT PAVEMENT CAP

REFERENCE
ENGINEERING CONTROLS ARE DESCRIBED IN THE REMEDIAL ACTION REPORT DATED FEBRUARY 1998 PREPARED BY ENVIRO-SCIENCES, INC.

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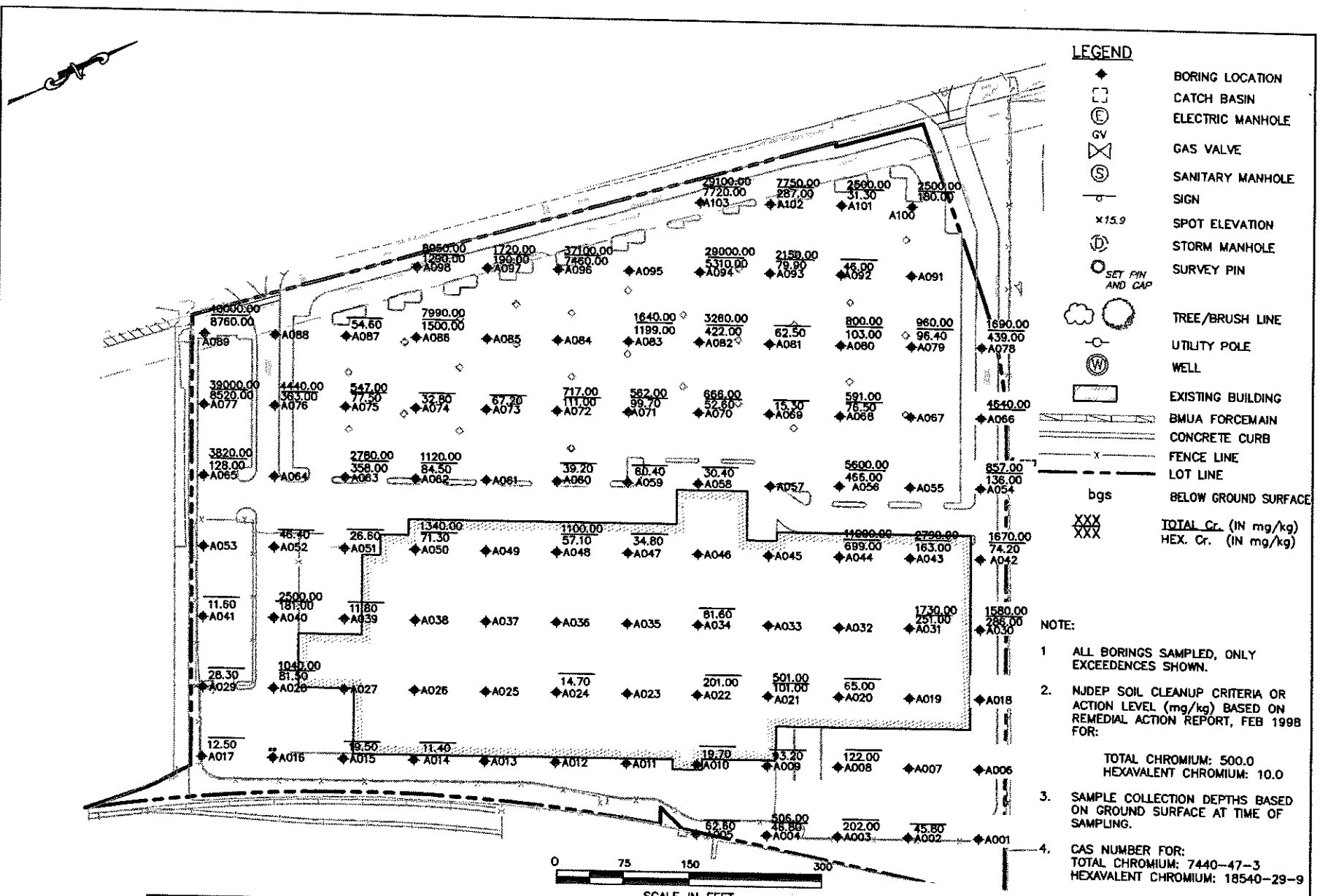
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PREPARED/DATE: STR 03/19/13
CHECKED/DATE: US 03/19/13

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

EXHIBIT B-1B
ENGINEERING CONTROL AS-BUILT DIAGRAM
BLOCK 26101, LOT 1.01
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

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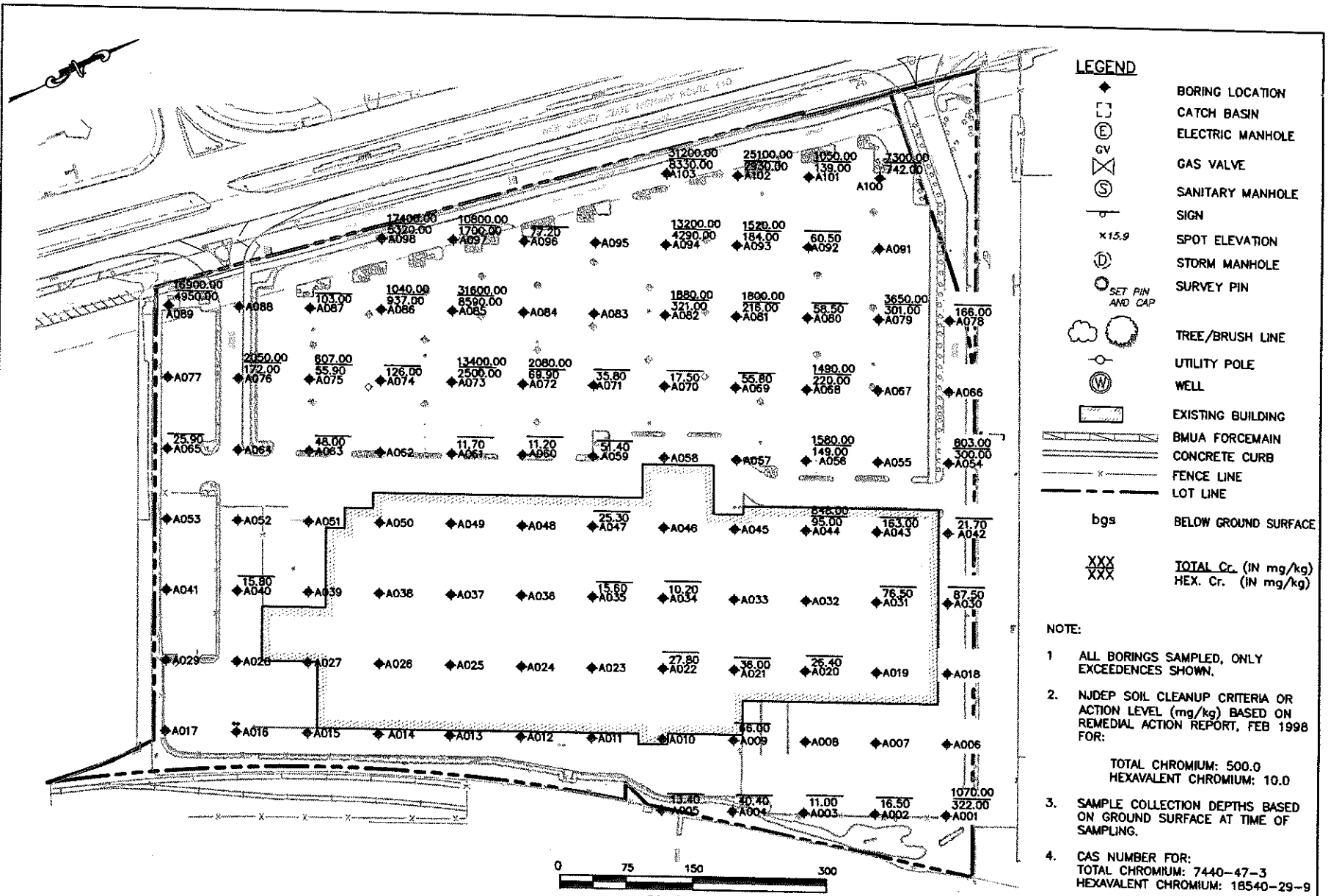
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PREPARED/DATE: STR 02/19/13
CHECKED/DATE: US 02/19/13

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

EXHIBIT B-2A
RESTRICTED AREA AND DATA MAP
TOTAL AND HEXAVALENT CHROMIUM (1'-4' bgs)
BLOCK 26101, LOT 1.01
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

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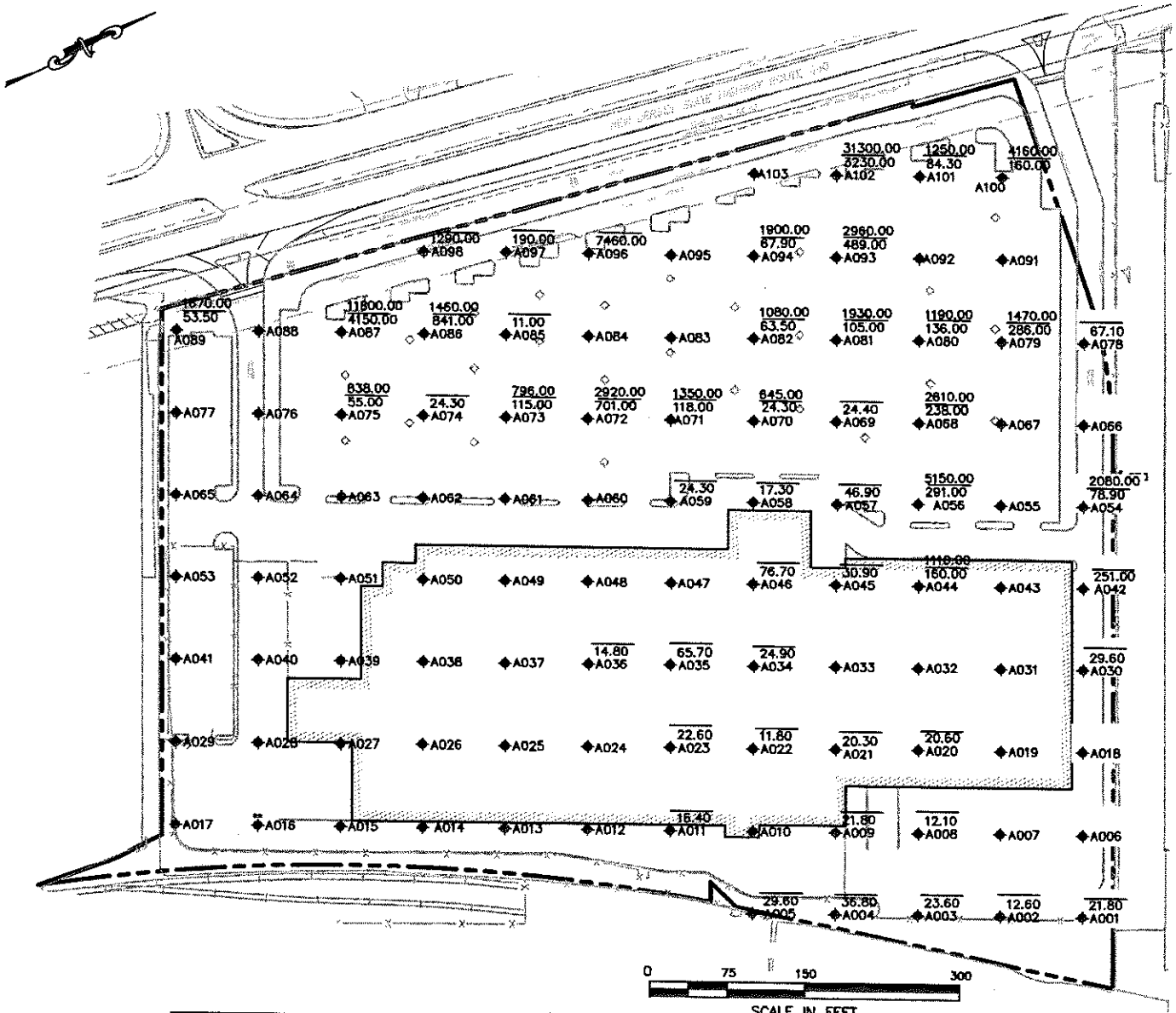
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PREPARED/DATE: STR 02/19/13
CHECKED/DATE: US 02/19/13

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

EXHIBIT B-2B
RESTRICTED AREA AND DATA MAP
TOTAL AND HEXAVALENT CHROMIUM (4'-8' bgs)
BLOCK 26101, LOT 1.01
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

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LEGEND

- BORING LOCATION
- CATCH BASIN
- ELECTRIC MANHOLE
- GV GAS VALVE
- SANITARY MANHOLE
- SIGN
- ×15.9 SPOT ELEVATION
- STORM MANHOLE
- SET PIN AND CAP SURVEY PIN
- TREE/BRUSH LINE
- UTILITY POLE
- WELL
- EXISTING BUILDING
- BMUA FORCEMAIN
- CONCRETE CURB
- FENCE LINE
- LOT LINE
- bgs BELOW GROUND SURFACE
- XXX / XXX TOTAL Cr. (IN mg/kg) / HEX. Cr. (IN mg/kg)

NOTE:

1 ALL BORINGS SAMPLED, ONLY EXCEEDENCES SHOWN.

2. NJDEP SOIL CLEANUP CRITERIA OR ACTION LEVEL (mg/kg) BASED ON REMEDIAL ACTION REPORT, FEB 1998 FOR:

   TOTAL CHROMIUM: 500.0
   HEXAVALENT CHROMIUM: 10.0

3. SAMPLE COLLECTION DEPTHS BASED ON GROUND SURFACE AT TIME OF SAMPLING.

4. CAS NUMBER FOR:
   TOTAL CHROMIUM: 7440-47-3
   HEXAVALENT CHROMIUM: 18540-29-9

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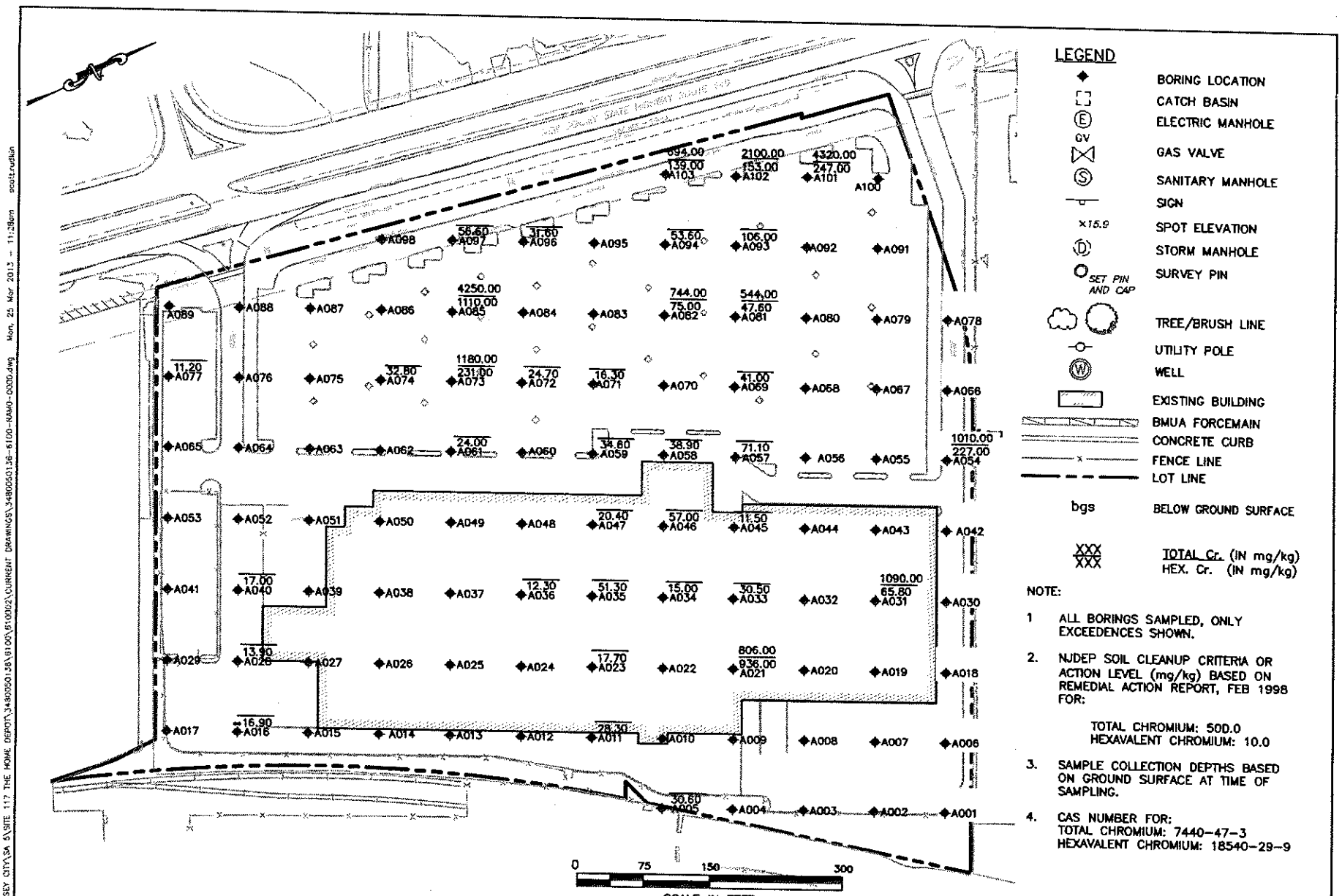
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PREPARED/DATE: STR 02/19/13
CHECKED/DATE: US 02/19/13

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

EXHIBIT B-2C
RESTRICTED AREA AND DATA MAP
TOTAL AND HEXAVALENT CHROMIUM (8'-12' bgs)
BLOCK 26101, LOT 1.01
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

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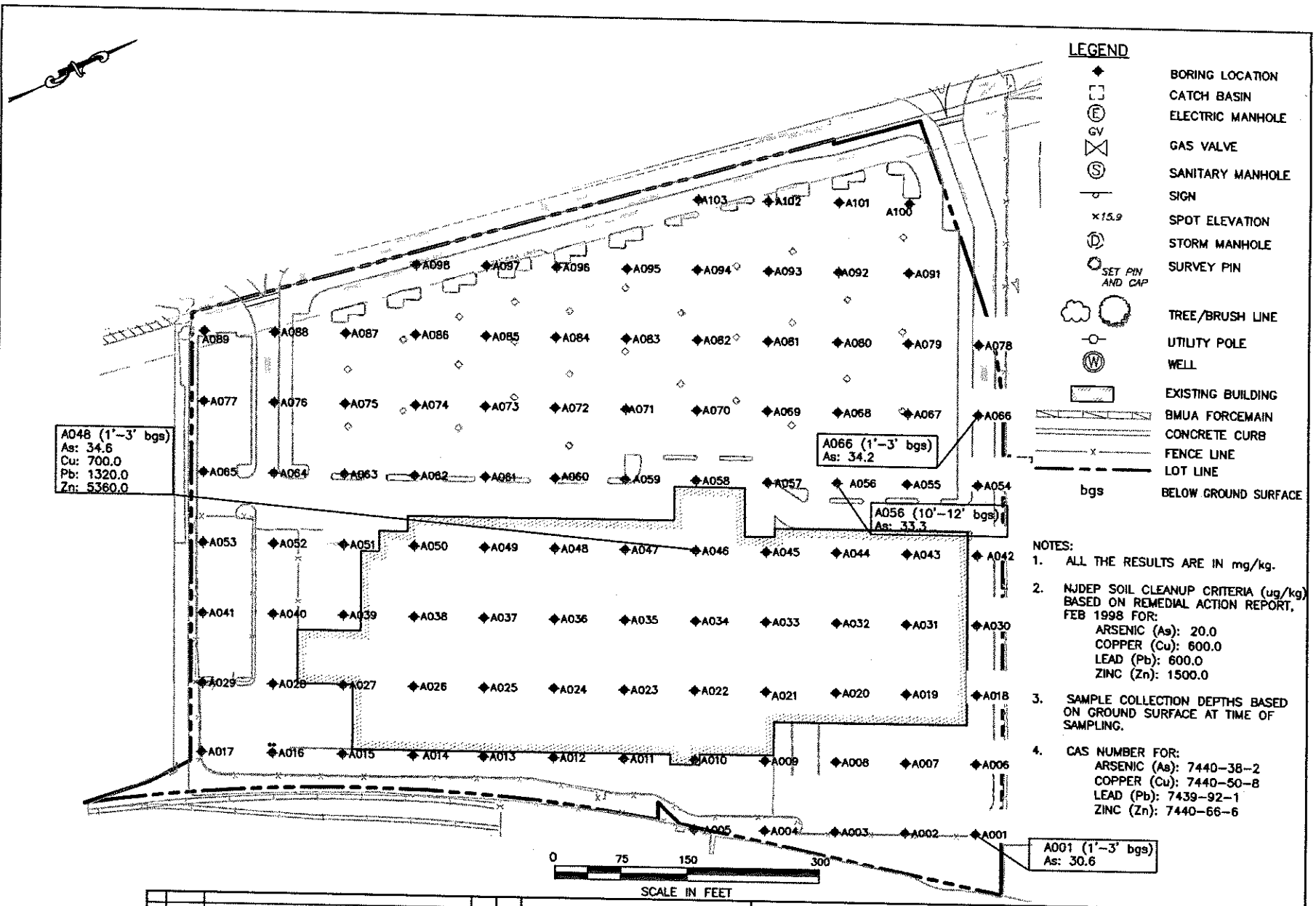
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PREPARED/DATE: STR 02/19/13
CHECKED/DATE: US 02/19/13

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

EXHIBIT B-2D
RESTRICTED AREA AND DATA MAP
TOTAL AND HEXAVALENT CHROMIUM (>12' bgs)
BLOCK 26101, LOT 1.01
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

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LEGEND

- BORING LOCATION
- CATCH BASIN
- ELECTRIC MANHOLE
- GV GAS VALVE
- SANITARY MANHOLE
- SIGN
- ×15.9 SPOT ELEVATION
- STORM MANHOLE
- SET PIN AND CAP SURVEY PIN
- TREE/BRUSH LINE
- UTILITY POLE
- WELL
- EXISTING BUILDING
- BMUA FORCEMAIN
- CONCRETE CURB
- FENCE LINE
- LOT LINE
- bgs BELOW GROUND SURFACE

NOTES:

1. ALL THE RESULTS ARE IN mg/kg.
2. NJDEP SOIL CLEANUP CRITERIA (ug/kg) BASED ON REMEDIAL ACTION REPORT, FEB 1998 FOR:
   - ARSENIC (As): 20.0
   - COPPER (Cu): 600.0
   - LEAD (Pb): 600.0
   - ZINC (Zn): 1500.0
3. SAMPLE COLLECTION DEPTHS BASED ON GROUND SURFACE AT TIME OF SAMPLING.
4. CAS NUMBER FOR:
   - ARSENIC (As): 7440–38–2
   - COPPER (Cu): 7440–50–8
   - LEAD (Pb): 7439–92–1
   - ZINC (Zn): 7440–66–6

REV.	DATE	STATUS	DRAFT BY	CHKD BY

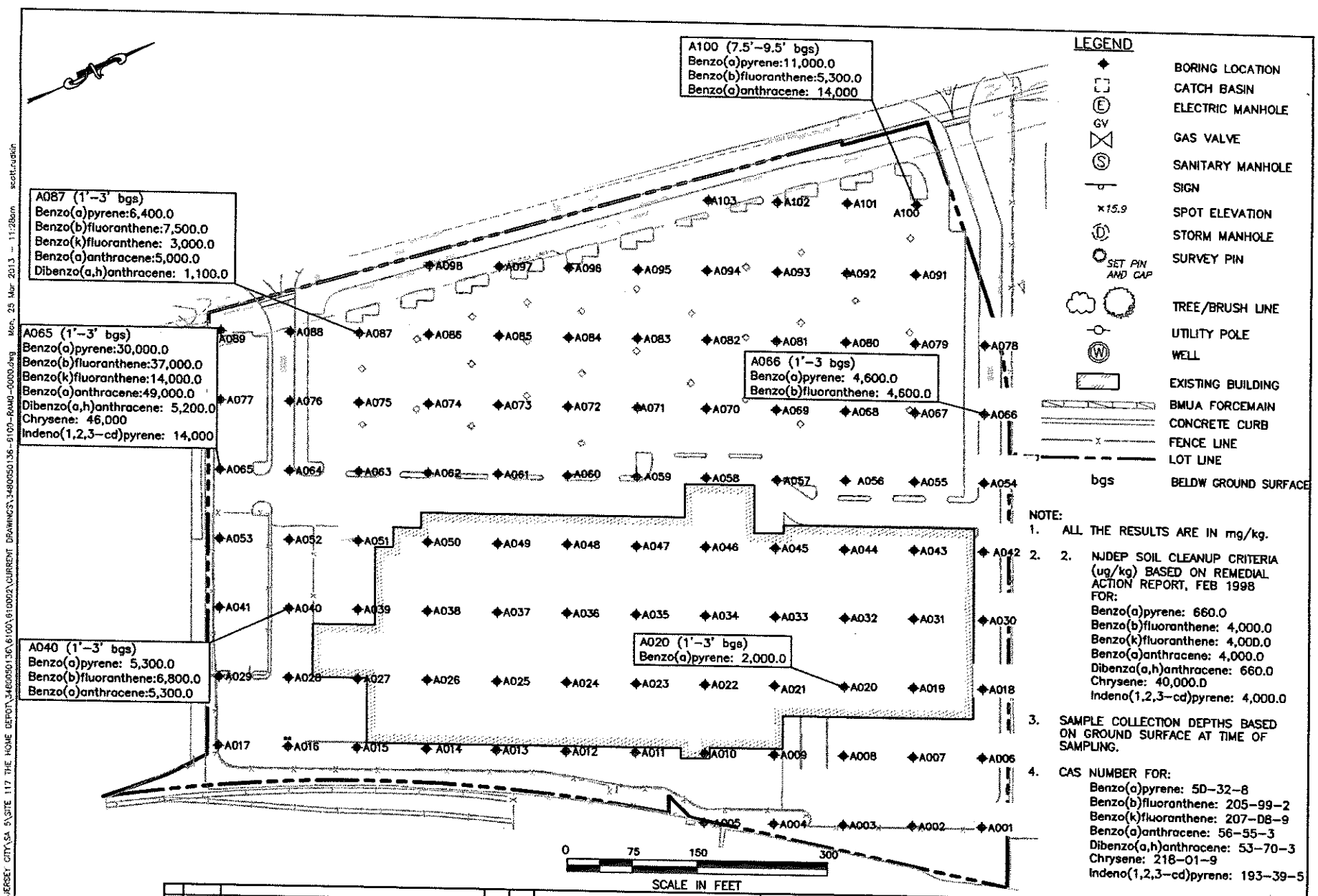
AMEC PROJ No.: 3480050361
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PREPARED/DATE: STR 02/19/13
CHECKED/DATE: US 02/19/13

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

EXHIBIT B-2E
RESTRICTED AREA AND DATA MAP
OTHER METALS
BLOCK 26101, LOT 1.01
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

P:\CAD\HONEYWELL\JERSEY CITY\SA 5\SITE 117 THE HOME DEPOT\3480050136\6100\610002\CURRENT DRAWINGS\3480050136-6100-RAM0-0000.dwg Fri, 14 Mar 2014 - 11:49am scott.durkin



NOTE:

1. ALL THE RESULTS ARE IN mg/kg.
2. 2. NJDEP SOIL CLEANUP CRITERIA (ug/kg) BASED ON REMEDIAL ACTION REPORT, FEB 1998 FOR:
   Benzo(a)pyrene: 660.0
   Benzo(b)fluoranthene: 4,000.0
   Benzo(k)fluoranthene: 4,000.0
   Benzo(a)anthracene: 4,000.0
   Dibenza(a,h)anthracene: 660.0
   Chrysene: 40,000.0
   Indeno(1,2,3–cd)pyrene: 4,000.0
3. SAMPLE COLLECTION DEPTHS BASED ON GROUND SURFACE AT TIME OF SAMPLING.
4. CAS NUMBER FOR:
   Benzo(a)pyrene: 50–32–8
   Benzo(b)fluoranthene: 205–99–2
   Benzo(k)fluoranthene: 207–08–9
   Benzo(a)anthracene: 56–55–3
   Dibenzo(a,h)anthracene: 53–70–3
   Chrysene: 218–01–9
   Indeno(1,2,3–cd)pyrene: 193–39–5

REV.	DATE	STATUS	DRFT BY	CHKD BY

AMEC PROJ No.: 3480050361
DRAWING: 3480050136–6100–RAM0–0000

PREPARED/DATE: STR 02/19/13
CHECKED/DATE: US 02/19/13

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

EXHIBIT B-2F
RESTRICTED AREA AND DATA MAP
SEMIVOLATILE ORGANIC COMPOUNDS
BLOCK 26101, LOT 1.01
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

P:\CADD\HONEYWELL\JERSEY CITY\SA 5\SITE 117 THE HOME DEPOT\3480050136\6100\610002\CURRENT DRAWINGS\3480050136-6100-RAM0-0000.dwg Mon, 25 Mar 2013 - 11:28am scott.rudkin

Exhibit C

C-1: Deed Notice as Institutional Controls
C-2: Engineering Controls

Former Ryerson Steel / Mutual Chemical Site – NJDEP Chromium Site 117
Block 26101, Lot 1.01
Jersey City, New Jersey 07305

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 an LLDPE liner system with either vegetation, asphalt pavement, concrete, or building concrete slab as a final surface cap and an asphalt pavement cap; operations and maintenance, monitoring and reporting requirements.

Exhibit C-1
Deed Notice as Institutional Controls

Former Ryerson Steel / Mutual Chemical Site – NJDEP Chromium Site 117
Block 26101, Lot 1.01
Jersey City, New Jersey 07305

(A) General Description:

(1) The Property shown on Exhibit B-1A known as Block 26101, Lot 1.01 is a Restricted Area. The estimated size of the Restricted Area is approximately 15 acres.

(2) Proper precautions must be taken to prevent disturbance (i.e., excavation or digging) of the engineering controls when in the Restricted Area. See subsections 7A and 7B of the Deed Notice for requirements for Alterations, Improvements, Disturbances, and Emergencies.

(3) The restrictions will prevent contact with soils above the NJDEP Soil Cleanup Criteria or Action Levels.

(B) Description of monitoring:

(1) Quarterly 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) Quarterly 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) Quarterly 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.

(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:

(1) A report of all conditions set forth in Deed Notice to document that they have been adhered to, including evaluation of any available documents created as a result of changes in land use or incidents.

(2) A report that determines whether or not the land use at the Property has remained consistent with the restrictions in the Deed Notice.

(3) A report that determines whether or not the Deed Notice continues to be protective of the public health and safety and of the environment.

Exhibits C-2 through C-6

Engineering Controls
C-2: Asphalt Pavement/Geomembrane Liner Cap
C-3: Concrete/Geomembrane Liner Cap
C-4: Building Concrete Slab/Geomembrane Liner Cap
C-5: Vegetative/Geomembrane Liner Cap
C-6: Asphalt Pavement Cap

Former Ryerson Steel Site – NJDEP Chromium Site 117
Block 26101, Lot 1.01
Jersey City, New Jersey 07305

(A) General Description:

(1) Engineering controls (from the ground surface to contaminated soil) in areas of the geomembrane liner system consist of:

a) Asphalt pavement, concrete, building concrete slab, or vegetative surface cap followed by;
b) A minimum of 6 inches to greater than 12 inches (typically) of clean fill material followed by;
c) A geomembrane drainage material followed by;
d) A 40-mil linear low density polyethylene (LLDPE) impervious geomembrane followed by;
e) A woven felt material

(2) Engineering controls in a small area on the southeastern corner of the site consists of asphalt pavement only as the engineering control

(3) The objective of the Engineering Controls is to prevent direct contact with soils that are above the applicable NJDEP Soil Cleanup Criteria or Action Levels.

(4) The Engineering Controls are intended to function as a barrier to underlying soils that are above the applicable NJDEP Soil Cleanup Criteria or Action Levels.

(B) Description of the operation and maintenance:

Visual inspections of the Property will be performed quarterly 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 5A. 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:

(1) A report of all conditions set forth in Deed Notice subparagraph 2.ii 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.

(2) A report to determine whether the Engineering Controls continue to operate as designed.

(3) A report to determine whether the Engineering Controls continue to be protective of the public health and safety and of the environment.

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02/09/2015 10:14:20 AM
DEED
NUMBER OF PAGES : 29
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APPENDIX D-2

Deed Notice for Wedge Parcel (Block 26101, Lot 1.02)

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]
Russell Bershad
[Print name below signature]

Recorded by: _____
[Signature, Officer of County Recording Office]

_____
[Print name below signature]



20150413010030050 1/23
04/13/2015 10:03:54 AM DEED
Bk: 9032 Pg: 535
Pamela E. Gardner
Hudson County, Register of Deeds
Receipt No. 1004696

DEED NOTICE

This Deed Notice is made as of the 1st day of April, 2015, by Bayfront Redevelopment, LLC, a wholly owned subsidiary of Honeywell International Inc., 101 Columbia Road, Morristown, NJ 07962 (together with its successors and assigns, collectively "Owner").

1. THE PROPERTY. Bayfront Redevelopment, LLC, is the owner in fee simple of certain real property designated as Block 26101, Lot 1.02, on the tax map of the City of Jersey City, Hudson County; the New Jersey Department of Environmental Protection (NJDEP) Program Interest Number (Preferred ID) for the contaminated site which includes this property is 008809; 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 NJDEP has approved this Deed Notice as an institutional control for the Property, which is part of the remediation of the Property.

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. G. Heller Enterprises, Inc., prior owner of the Property, in cooperation with Honeywell International Inc. (Honeywell), remediated contaminated soil at the Property, such that soil contamination remains in certain areas of the Property 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

Action Report dated February 1998, and the New Jersey Department of Environmental Protection issued a No Further Action Letter for soils dated March 27, 1998. 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. (NOTE: An institutional control for groundwater referred to as a Classification Exception Area [CEA] was approved by the NJDEP on February 16, 2012; CEA information can be obtained from the NJDEP via Open Public Records Act records request.)

4. CONSIDERATION. In accordance with the remedial action for 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 remedial action 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, operators, tenants, lessees, and contractors and workers intending to conduct invasive work within the Restricted Area.

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.

5D. WORKER PROTECTION PLAN. Honeywell has prepared a Worker Protection Plan for use by the owner, lessee and/or operators for the protection of workers who may be potentially exposed to chromium-impacted soils or groundwater in conjunction with utility or other ground intrusive work on the Property; the Worker Protection Plan identifies health and

safety requirements for the protection of personnel and contractors who may perform ground intrusive activities (e.g., digging, drilling, excavation) that may disturb existing engineering controls and provides a basis for worker awareness to inform workers of potential hazards associated with chromium-impacted media. The Owner shall make the Worker Protection Plan available to operators, tenants, contractors and/or utility workers intending to conduct invasive work within the Restricted Area to prevent unauthorized disturbance of engineering controls and potential exposure to contaminants

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, of the precautions necessary to minimize potential human exposure to contaminants, and, of the Worker Protection Plan that must be followed.

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; and then notifies Honeywell (by calling 855-727-2658) and the Owner at least seventy-two (72) hours before 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) Follows the Worker Protection Plan and all applicable worker health and safety laws and regulations during the alteration, improvement, or disturbance, and during the restoration;

(D) Takes appropriate measures so 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 and then notifies Honeywell by calling 855-727-2658;

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 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 Hudson County Register of Deeds 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;

ii. Exhibit A-2: Metes and Bounds Description - A tax map of lots and blocks as wells 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, 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 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) (Data not available electronically; it is provided on the figure presented as Exhibit B-2):

(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) (Locations are shown on Exhibit B-2);

(C) Sample elevation based upon mean sea level (Sample elevations are not available based on information provided by historic reports. Sample depth intervals were provided however, the ground surface elevation has changed due to the implemented remedial action and development of the property);

(D) Name and chemical abstract service registry number of each contaminant with a concentration that exceeds the unrestricted use standard (CAS Numbers are provided on Exhibit B-2);

(E) The restricted and unrestricted use standards for each contaminant in the table; and (applicable standards for each contaminant are provided on Exhibit B-2);

(F) The remaining concentration of each contaminant at each sample location at each elevation (concentrations are provided on Exhibit B-2).

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: Asphalt Pavement / Geomembrane Liner Cap: Exhibit C-2 includes a narrative description of the Asphalt Pavement / Geomembrane Liner 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.

iii. Exhibit C-3: Concrete / Geomembrane Liner Cap: Exhibit C-3 includes a narrative description of the Concrete / Geomembrane Liner 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.

iv. Exhibit C-4: Vegetative / Geomembrane Liner Cap: Exhibit C-4 includes a narrative description of the Vegetative / Geomembrane Liner 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.

13. SIGNATURES. IN WITNESS WHEREOF, Owner has executed this Deed Notice as of the date first written above.

ATTEST: Bayfront Redevelopment, LLC

Maria Kaouris By William Hague

Maria Kaouris - Remediation manager [Signature] Director

[Print name and title]

STATE OF NEW JERSEY SS.:
COUNTY OF HUDSON

I certify that on April 1st, 2015, Maria Kaouris personally came before me, and this person acknowledged under oath, to my satisfaction, that:

(a) this person is the Remediation Manager of Honeywell International Inc., of which Bayfront Redevelopment, LLC, the corporation named in this document, is a wholly owned subsidiary;

(b) this person is the attesting witness to the signing of this document by the proper corporate officer William J. Hague who is Director of Remediation Design & Construction for Honeywell International Inc, of which Bayfront Redevelopment LLc is a wholly owned subsidiary;

(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;

(e) this person signed this proof to attest to the truth of these facts.

Cheryl L. Toles
[Signature]

Cheryl L. Toles
[Print name and title of attesting witness]

Signed and sworn before me on Apr. 1, 2015

Cheryl L. Toles, Notary Public

Cheryl L. Toles
[Print name and title]

CHERYL L. TOLES NOTARY PUBLIC ID# 2336504 PASSAIC COUNTY, NJ

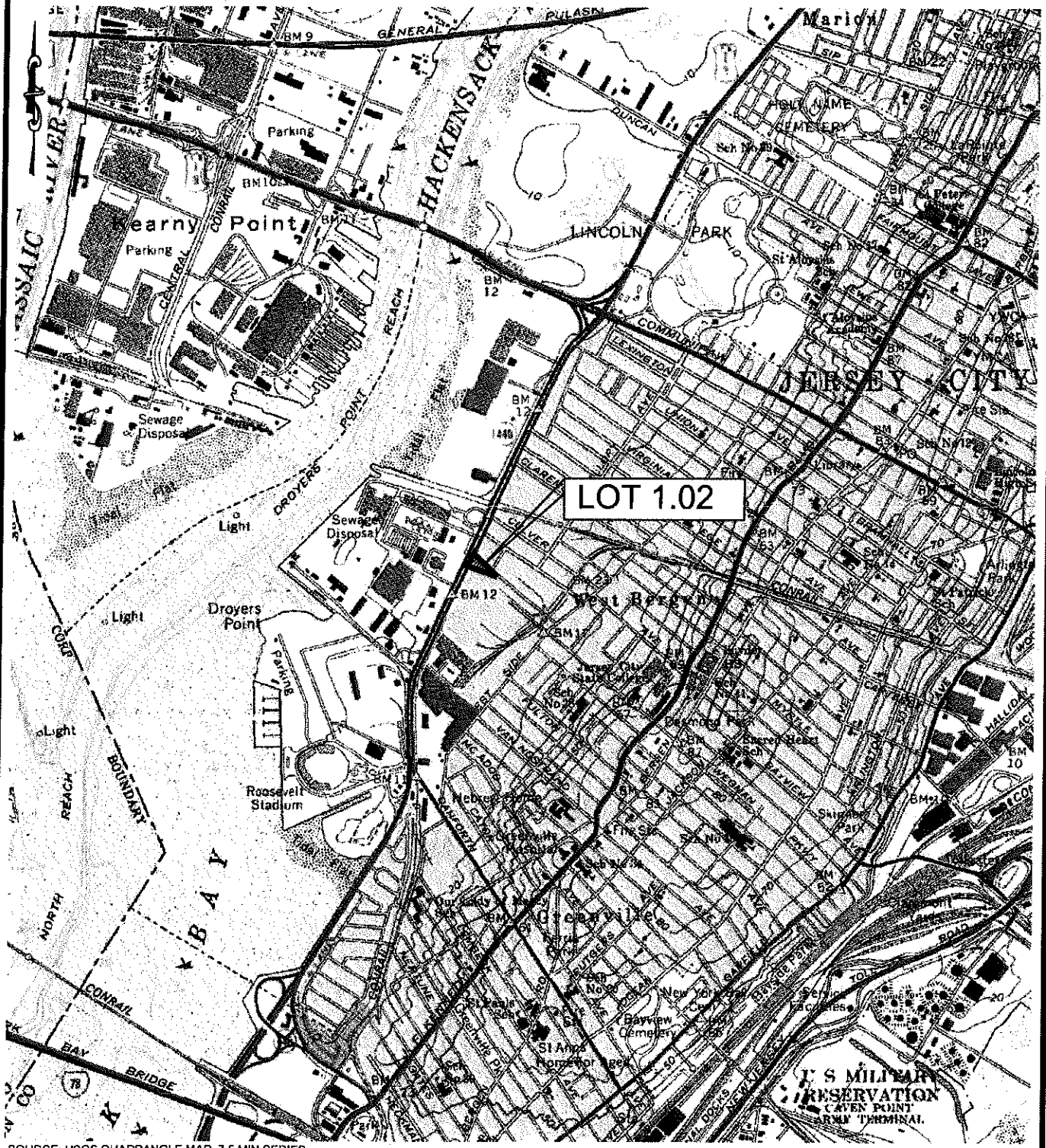
Record and Return to:
Annette M. Wall, Senior Paralegal
Gibbons P.C.
One Gateway Center
Newark, New Jersey 07102

Exhibit A

A-1: Vicinity Map

A-2A: Metes and Bounds Description
A-2B: Tax Map of Lots and Blocks

A-3: Property Map



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.: 3480050361 *DRAWING:* 3480050136-6100-A1VM-0000		amec ENVIRONMENT & INFRASTRUCTURE 200 AMERICAN METRO BLVD, SUITE 113 HAMILTON, NEW JERSEY 08619	**EXHIBIT A-1** VICINITY MAP DEED NOTICE BLOCK 26101, LOT 1.02 SA 5 - SITE 117 FORMER RYERSON STEEL JERSEY CITY, NEW JERSEY
PREPARED/DATE: STR 02/15/13	*CHECKED/DATE:* US 02/18/13		

FILE: P:\CADD\HONEYWELL\JERSEY CITY\SA 5\SITE 117 THE HOME DEPOT\3480050136\6100\610002\CURRENT DRAWINGS\3480050136-6100-A1VM-0000.DWG, DATE: 03/25/2013 11:37:45AM Layout: lot 1.02

Exhibit A-2A

Metes and Bounds Description

All that certain lot, tract or parcel of land situate, lying and being in the City of Jersey City, in the County of Hudson and the State of New Jersey, designated as Proposed Lot 1.02 as shown on a map entitled "Minor Subdivision Plat for Bayfront Redevelopment, LLC, Lot 1 Block 26101 (Formerly Block 1285.05), City of Jersey City, Hudson County, New Jersey" prepared by Maser Consulting, P.A. dated September 9, 2011, last revised April 2, 2012, being a portion of Lot 1, Block 26101 (formerly Block 1285.05), and being more particularly bounded and described as follows, to wit:

BEGINNING at the intersection of the Easterly line of Block 21902, Lot 1, (lands now or formerly of Bayfront Redevelopment LLC, as shown on the aforementioned minor subdivision plat, said lands also being lands formerly of the Morris Canal Banking Company as recited in a deed from DDR Southeast Jersey City, L.L.C., to Jersey City Fields, LLC, dated September 12, 2008 and recorded in the Hudson County Clerk's Office on September 18, 2008 in deed book 8611, page 257), with the division line between Block 26101 (formerly Block 1285.05) Lot, 1 and Block 21902 Lot 13 and running; thence–

1. **S 49°06'18" E, 385.30 feet** along said division line to a point of cusp, being the eastern most corner of the herein described parcel, thence –

   Running through said Lot 1, along the proposed subdivision line as laid down on the aforementioned minor subdivision plat, the following two (2) courses:

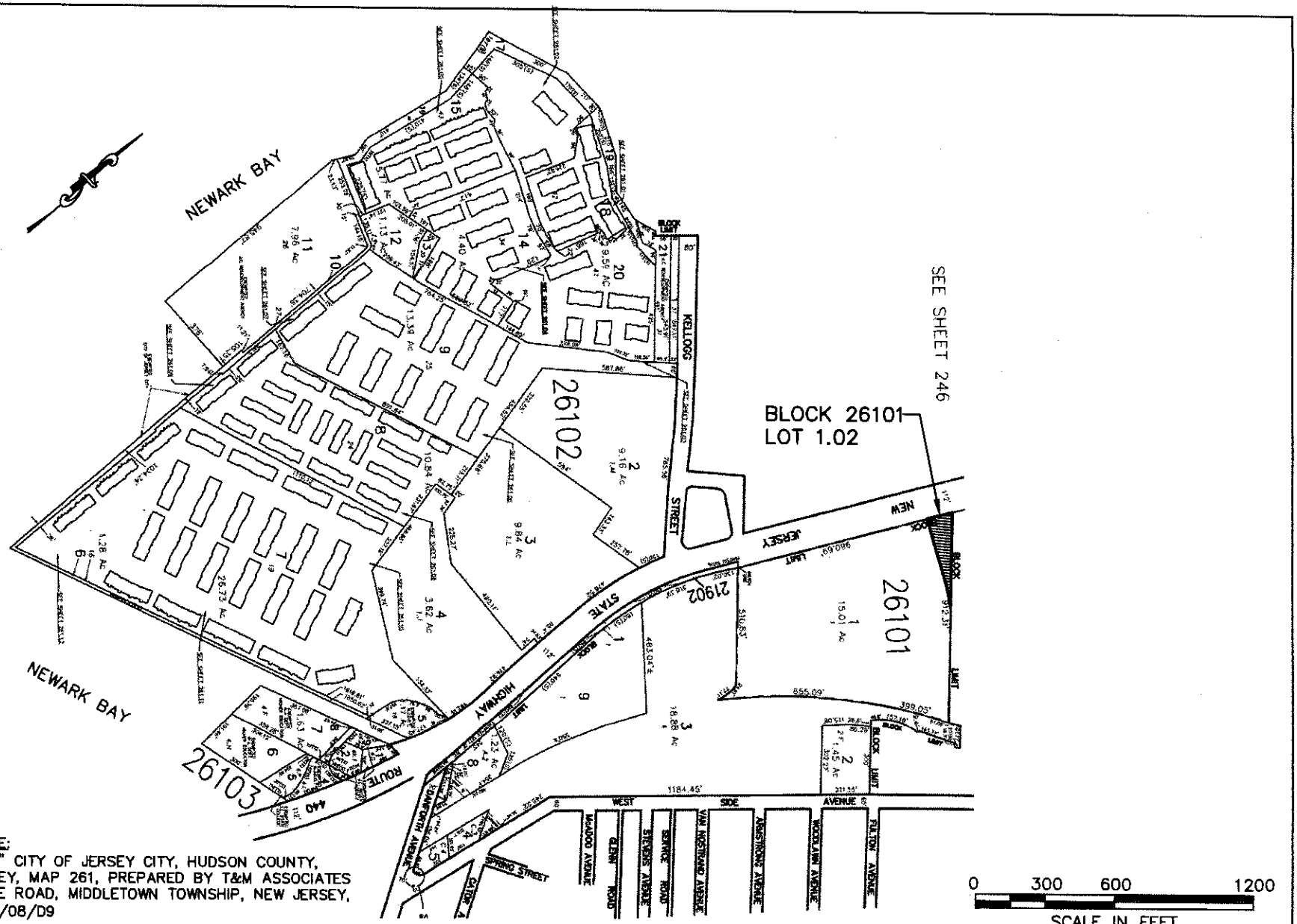
2. Along a non-tangent arc to the left having a radius of **470.00'**, and arc length of **157.65'** (central angle of **19°13'05"**), said arc being connected by a chord bearing **N 58° 42'51" W,** a chord distance of **156.91** to a point of tangency, thence -

3. **N 68°19'24" W, 214.57 feet**, to the intersection of the same with the aforementioned Lot 1, Block 21902 easterly line, thence –

4. **N 24°46'42" E, 100.78 feet,** along said easterly line to the Point and Place of **BEGINNING.**

CONTAINING: 15,152 square feet / 0.347 acres of land more or less.

The foregoing description was prepared by the undersigned Land Surveyor for the firm of Maser Consulting P.A., and is based upon the above described minor subdivision plat.



REFERENCE:
"TAX MAP" CITY OF JERSEY CITY, HUDSON COUNTY, NEW JERSEY, MAP 261, PREPARED BY T&M ASSOCIATES 11 TINDALE ROAD, MIDDLETOWN TOWNSHIP, NEW JERSEY, DATED 05/08/09

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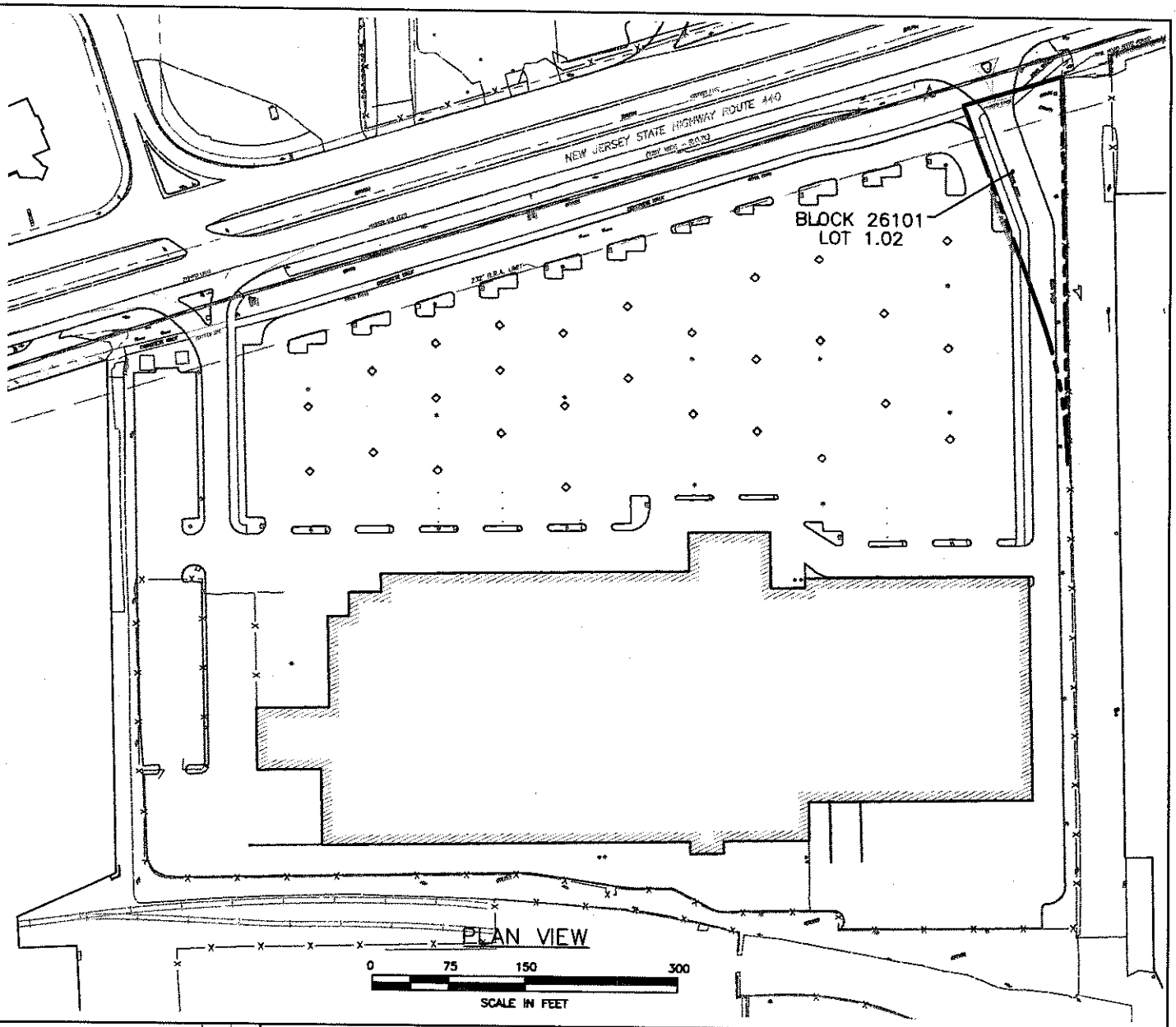
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DRAWING: 3480050136-6100-A2TM-0000

PREPARED/DATE: STR 02/15/13
CHECKED/DATE: US 02/18/13

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

EXHIBIT A-2B
TAX MAP
BLOCK 26101, LOT 1.02
SA-5 SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

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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
- LOT LINE
- FENCE LINE
- CONCRETE CURB

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AMEC PROJ No.: 3480050361
DRAWING: 3480050136-6100-A3PM-0000

PREPARED/DATE: STR 02/19/13
CHECKED/DATE: US 02/19/13

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

EXHIBIT A-3
PROPERTY MAP
BLOCK 26101, LOT 1.02
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

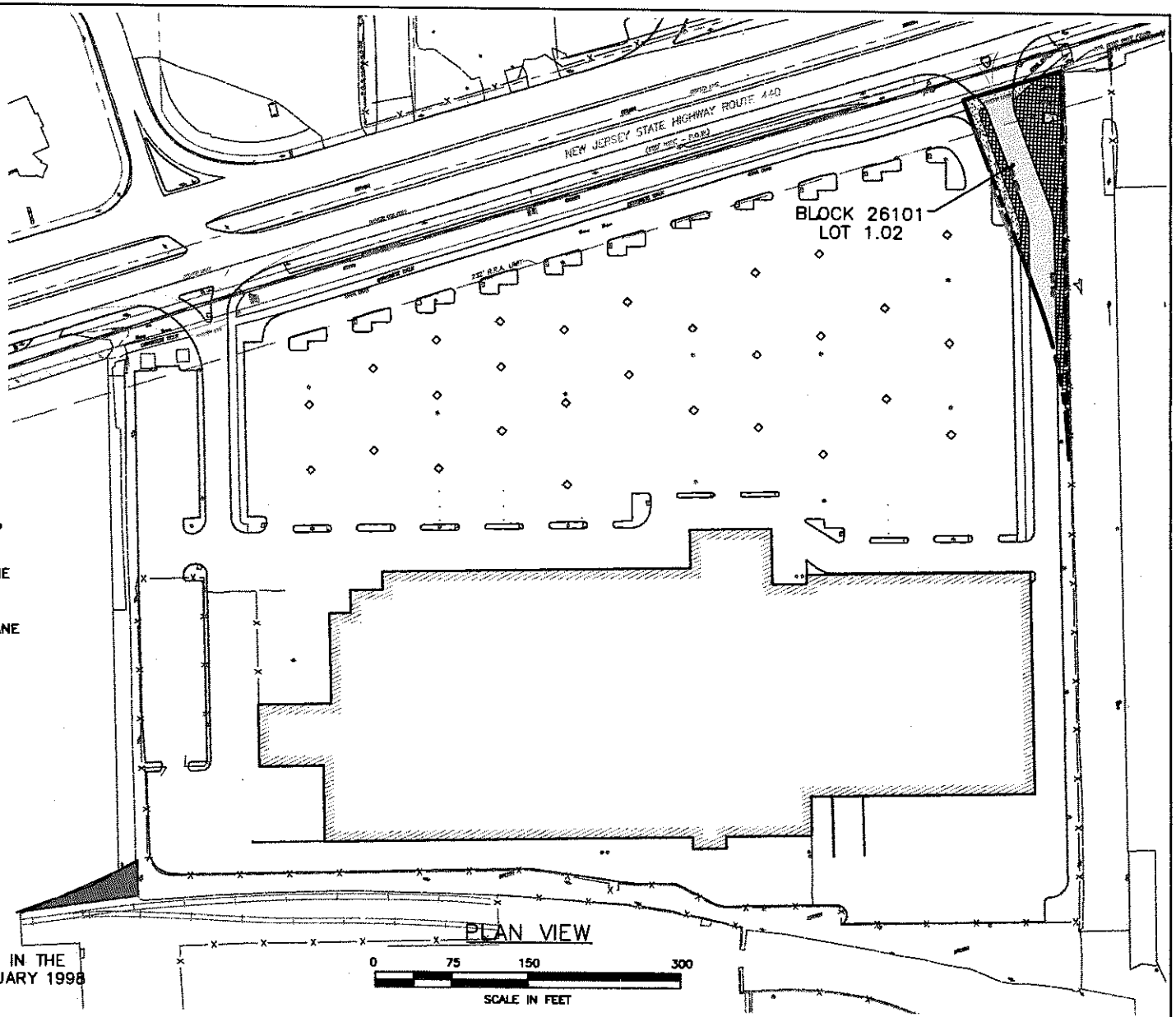
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Exhibit B

Exhibit B-1A: Restricted Areas and Engineering Control Location Map

Exhibit B-1B: Engineering Control As-Built Diagrams

Exhibit B-2: Restricted Area Map and Data Table - Total and Hexavalent Chromium



LEGEND

- ASPHALT PAVEMENT/ GEOMEMBRANE LINER CAP
- CONCRETE/ GEOMEMBRANE UNER CAP
- VEGETATIVE/ GEOMEMBRANE LINER CAP
- LOT LINE

REFERENCE
ENGINEERING CONTROLS ARE DESCRIBED IN THE REMEDIAL ACTION REPORT DATED FEBRUARY 1998 PREPARED BY ENVIRO-SCIENCES, INC.

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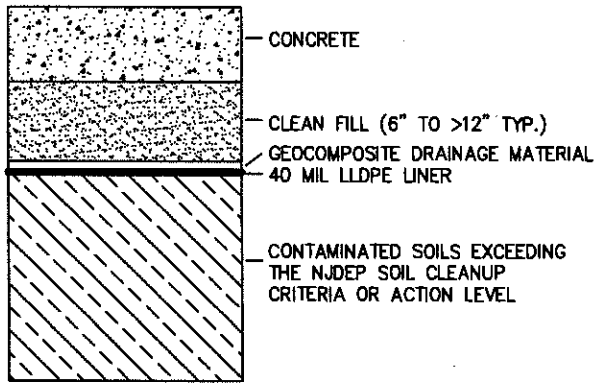
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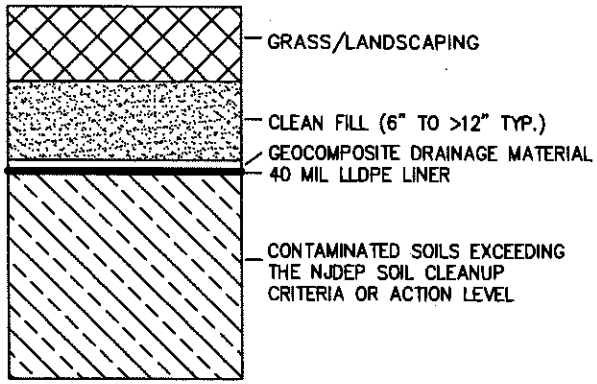
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200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

EXHIBIT B-1A
RESTRICTED AREA AND ENGINEERING CONTROL LOCATION MAP
BLOCK 26101, LOT 1.02
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

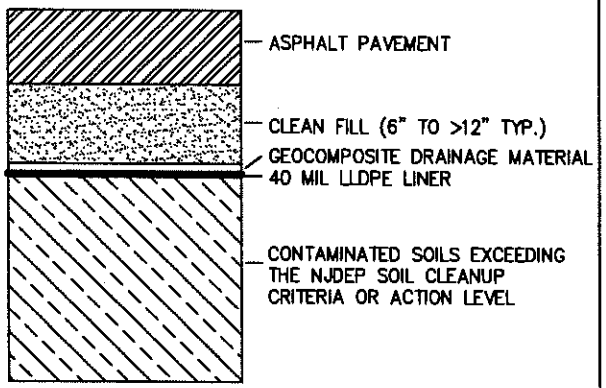
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CONCRETE/GEOMEMBRANE LINER CAP



VEGETATIVE/GEOMEMBRANE LINER CAP



ASPHALT PAVEMENT/GEOMEMBRANE LINER CAP

REFERENCE
ENGINEERING CONTROLS ARE DESCRIBED IN THE REMEDIAL ACTION REPORT DATED FEBRUARY 1998 PREPARED BY ENVIRO-SCIENCES, INC.

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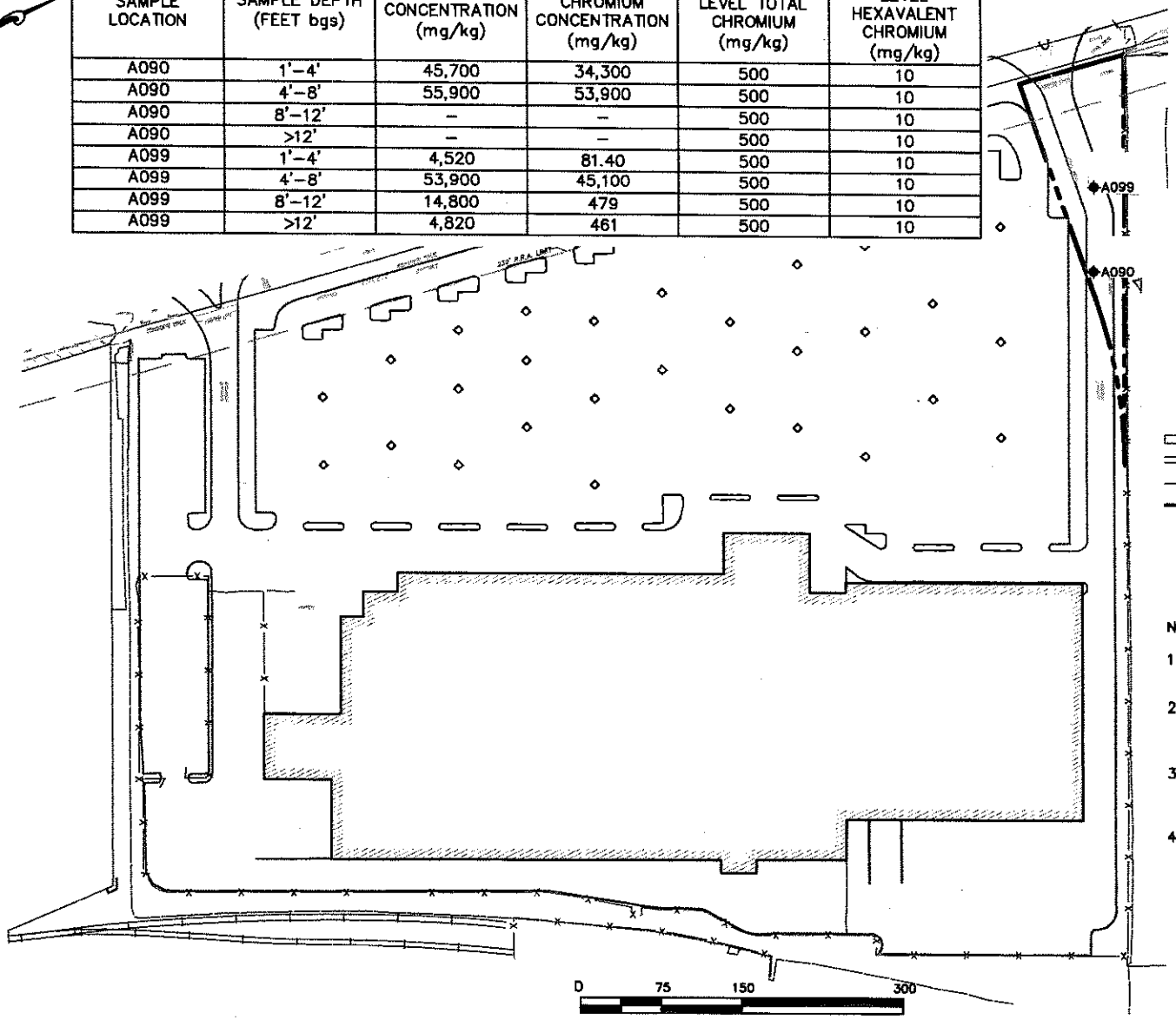
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CHECKED/DATE: US 03/19/13

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

EXHIBIT B-1B
ENGINEERING CONTROL AS-BUILT DIAGRAM
BLOCK 26101, LOT 1.02
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

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SAMPLE LOCATION	SAMPLE DEPTH (FEET bgs)	TOTAL CHROMIUM CONCENTRATION (mg/kg)	HEXAVALENT CHROMIUM CONCENTRATION (mg/kg)	NJDEP ACTION LEVEL TOTAL CHROMIUM (mg/kg)	NJDEP ACTION LEVEL HEXAVALENT CHROMIUM (mg/kg)
A090	1'–4'	45,700	34,300	500	10
A090	4'–8'	55,900	53,900	500	10
A090	8'–12'	–	–	500	10
A090	>12'	–	–	500	10
A099	1'–4'	4,520	81.40	500	10
A099	4'–8'	53,900	45,100	500	10
A099	8'–12'	14,800	479	500	10
A099	>12'	4,820	461	500	10



LEGEND

- BORING LOCATION
- CATCH BASIN
- ELECTRIC MANHOLE
- GV GAS VALVE
- SANITARY MANHOLE
- SIGN
- ×15.9 SPOT ELEVATION
- STORM MANHOLE
- SET PIN AND CAP SURVEY PIN
- TREE/BRUSH LINE
- UTILITY POLE
- WELL
- EXISTING BUILDING
- BMUA FORCEMAIN
- CONCRETE CURB
- FENCE LINE
- LOT LINE
- bgs BELOW GROUND SURFACE
- XXX / XXX TOTAL Cr. (IN mg/kg) / HEX. Cr. (IN mg/kg)

NOTE:

1. ALL BORINGS SAMPLED, ONLY EXCEEDENCES SHOWN.
2. NJDEP SOIL CLEANUP CRITERIA OR ACTION LEVEL (mg/kg) BASED ON REMEDIAL ACTION REPORT, FEB 1998.
3. SAMPLE COLLECTION DEPTHS BASED ON GROUND SURFACE AT TIME OF SAMPLING.
4. CAS NUMBER FOR:
   TOTAL CHROMIUM: 7440–47–3
   HEXAVALENT CHROMIUM: 18540–29–9

REV.	DATE	STATUS	DRFT BY	CHKD BY

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DRAWING: 3480050136–6100–RAMB–0000

PREPARED/DATE: STR 02/19/13
CHECKED/DATE: US 02/19/13

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

EXHIBIT B-2
RESTRICTED AREA AND DATA MAP
TOTAL AND HEXAVALENT CHROMIUM
BLOCK 26101, LOT 1.02
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

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Exhibit C

C-1: Deed Notice as Institutional Controls
C-2 through 4: Engineering Controls

Former Ryerson Steel / Mutual Chemical Site – NJDEP Chromium Site 117
Block 26101, Lot 1.02.
Jersey City, New Jersey 07305

Exhibit C-1 includes a description of the deed notice as institutional control including monitoring and reporting requirements.

Exhibit C-2 through 4 includes a description of engineering controls consisting of an LLDPE liner system with asphalt pavement, concrete or vegetation as a final surface cap; operations and maintenance, monitoring and reporting requirements.

Exhibit C-1

Deed Notice as Institutional Controls

Former Ryerson Steel / Mutual Chemical Site – NJDEP Chromium Site 117
Block 26101, Lot 1.02
Jersey City, New Jersey 07305

(A) General Description:

(1) The Property shown on Exhibit B-1A known as Block 26101, Lot 1.02 is a Restricted Area. The estimated size of the Restricted Area is approximately 0.35 acres.

(2) Proper precautions must be taken to prevent disturbance (i.e., excavation or digging) of the engineering controls when in the Restricted Area. See subsections 7A and 7B of the Deed Notice for requirements for Alterations, Improvements, Disturbances, and Emergencies.

(3) The restrictions will prevent contact with soils above the NJDEP Soil Cleanup Criteria or Action Levels.

(B) Description of monitoring:

(1) Quarterly 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) Quarterly 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) Quarterly 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.

(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:

(1) A report of all conditions set forth in Deed Notice to document that they have been adhered to, including evaluation of any available documents created as a result of changes in land use or incidents.

(2) A report that determines whether or not the land use at the Property has remained consistent with the restrictions in the Deed Notice.

(3) A report that determines whether or not the Deed Notice continues to be protective of the public health and safety and of the environment.

Exhibits C-2 through C-4

Engineering Controls
C2: Asphalt Pavement/Geomembrane Liner Cap
C3: Concrete/Geomembrane Liner Cap
C4: Vegetative/Geomembrane Liner Cap

Former Ryerson Steel – NJDEP Chromium Site 117
Block 26101, Lot 1.02
Jersey City, New Jersey 07305

(A) General Description:

(1) Engineering controls (from the ground surface to contaminated soil) in areas of the geomembrane liner system consist of:

a) Asphalt pavement, concrete, or vegetative surface cap followed by;
b) A minimum of 6 inches to greater than 12 inches (typically) of clean fill material followed by;
c) A geomembrane drainage material followed by;
d) A 40-mil linear low density polyethylene (LLDPE) impervious geomembrane followed by;
e) A woven felt material

(2) The objective of the Engineering Controls is to prevent direct contact with soils that are above the applicable NJDEP Soil Cleanup Criteria or Action Levels.

(3) The Engineering Controls are intended to function as a barrier to underlying soils that are above the applicable NJDEP Soil Cleanup Criteria or Action Levels.

(B) Description of the operation and maintenance:

Visual inspections of the Property will be performed quarterly 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 5A. 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:

(1) A report of all conditions set forth in Deed Notice subparagraph 2.ii 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.

(2) A report to determine whether the Engineering Controls continue to operate as designed.

(3) A report to determine whether the Engineering Controls continue to be protective of the public health and safety and of the environment.

APPENDIX E

SUBSURFACE WORK AUTHORIZATION/DIG PERMIT FORM

SUBSURFACE WORK AUTHORIZATION FORM / DIGGING AND EXCAVATION PERMIT

Site 117 – Former Ryerson Steel

Prior to Performing Work (Completed by Site Property Owner/Tenant or Contractor)					
Project Name:					
Request Date:		**Est. Start Date:**		**Est. Duration:**	
General Work Description:					
Depth of Digging/Excavation:					
Contractor Performing Work:					
Contractor Supervisor:			**Phone No.:**		
Site Owner/Tenant Project Contact:			**Phone No.:**		
Location of Work:					

Prior to Performing Work (Completed by Site Property Owner/Tenant and Honeywell)

☐ Contact Honeywell to review proposed work activity.

☐ Provide drawings showing proposed subsurface work or design drawings (if applicable).

☐ Schedule project meeting to review proposed work and coordination with Honeywell.

Yes ☐ **No** ☐ Does proposed work involve disturbance to engineering controls? If yes, review deed notice requirements for disturbances, restoration, notification, reporting; and confirm that workers receive and review the Worker Protection Plan.

Yes ☐ **No** ☐ NJDEP to be notified per Deed Notice. Estimated date of notification: _____

Field Work Phase (Prior to Digging) (Completed by Honeywell)

1. Honeywell field oversight or contractor coordination required?	**Yes** ☐	- coordinate with Honeywell representative.
	No ☐	- proceed with work/no further input from Honeywell.
2. Will the project involve excavation and offsite disposal of chromium soils?	**Yes** ☐	- coordinate with Honeywell representative.
	No ☐	- proceed with work/no further input from Honeywell.

HONEYWELL AND SITE OWNER/TENANT APPROVAL REQUIRED TO PROCEED WITH WORK.

Comments (Completed by Contractor, Site Owner/Tenant and Honeywell)

Contractor Signature:		**Date:**	
Site Owner/Tenant Signature:		**Date:**	
Honeywell Signature:		**Date:**	

COMPLETE PAGE 1 BEFORE FIELD WORK COMMENCES

SUBSURFACE WORK AUTHORIZATION FORM / DIGGING AND EXCAVATION PERMIT

Site 117 – Former Ryerson Steel

COMPLETE THIS SECTION ONLY IF THERE ARE DESIGN OR FIELD CHANGES

Field Work Changes (Completed by Contractor, Site Owner/Tenant and Honeywell)
IN THE EVENT OF ANY DESIGN OR FIELD CHANGES DURING WORK IMPLEMENTATION, PROVIDE A BRIEF DESCRIPTION OF DESIGN AND/OR FIELD CHANGE AND OBTAIN HONEYWELL APPROVAL TO PROCEED WITH WORK.
Describe Changed Conditions (Completed by Contractor, Site Owner/Tenant and Honeywell)

Contractor Signature:		**Date:**	
Site Owner/Tenant Signature:		**Date:**	
Honeywell Signature:		**Date:**	

COMPLETE THE SECTION BELOW AFTER WORK IS COMPLETE

Post-Work Phase/Closeout Requirements
(Completed by Contractor, Site Owner/Tenant and Honeywell)

Actual Start Date:		**Actual Finish Date:**	
Actual NJDEP Notification Date:		**NJDEP Incident Number:**	

- ☐ 1. Compile representative photographs showing work progress, restoration of engineering controls.
- ☐ 2. Prepare as-built figure or other appropriate drawing(s) showing work area, relevant site features.
- ☐ 3. Prepare and submit deed notice disturbance report.

HONEYWELL AND SITE OWNER/TENANT SIGN-OFF REQUIRED AT COMPLETION OF WORK.

Comments (Completed by Contractor, Site Owner/Tenant and Honeywell)

Contractor Signature:		**Date:**	
Site Owner/Tenant Signature:		**Date:**	
Honeywell Signature:		**Date:**	

PROCEDURE FOR COORDINATING UTILITY WORK WITHIN CHROMIUM SOIL AREAS

BAYONNE FORCE MAIN
(FORMER MORRIS CANAL SITE)
JERSEY CITY, NEW JERSEY

Prepared by
Amec Foster Wheeler Environment & Infrastructure, Inc.
200 American Metro Boulevard, Suite 113
Hamilton, New Jersey 08619

NOVEMBER 2016

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FIGURES

Figure 1: Former Morris Canal Site and NJCU Commercial Area

ILLUSTRATIONS

Illustration 1: SOP General Process Flow Summary

APPENDICES

Appendix A: SOP Process Flow Chart/Honeywell Response Team Key Personnel
A-1: Notification and Response System Flow Chart
A-2: Honeywell Response Team Key Personnel
Appendix B: Site Maps: Morris Canal Site/BMUA Force Main
B-1: Site Location Map
B-2: Areas of Contamination and Engineering Controls
B-3: As-Built Figures for Remedial Actions
Appendix C: Worker Training Manual (separate document)
Appendix D: Draft Specifications for Chromium Materials Excavation and Management
Appendix E: Reference Bayonne MUA Rules and Regulations for Site Work, Excavation and Backfill
Appendix F: Sewer Protocol

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This Standard Operating Procedure is hereby approved by the following parties and each agrees to abide by the obligations herein:

DocuSigned by:
John D. Morris
E013C567A19144E...

2/1/2017

Honeywell - Global Remediation Director — Date

Bayonne Municipal Utilities Authority - Director — Date

This Standard Operating Procedure is hereby approved by the following parties and each agrees to abide by the obligations herein:

Honeywell - Global Remediation Director	Date
~~Bayonne Municipal Utilities Authority - Director~~ Superintendent DPW	2.1.2017 Date

1.0 INTRODUCTION AND SCOPE

Honeywell has developed this Standard Operating Procedure (SOP) to assist the Bayonne Municipal Utilities Authority (BMUA) in safely and protectively executing work on the BMUA force main, located within NJDEP Site 153, the Former Morris Canal Site in Jersey City ("Morris Canal Site" or "Site"). The Morris Canal Site is defined by NJDEP as the area between Danforth Avenue and Carbon Place (Block 21902, Lot 1).

Utility workers will follow this SOP when they have to repair or otherwise maintain the force main sewer pipeline and any associated equipment within the Site. This SOP has been prepared because the pipeline has been constructed in areas where chromium-contaminated soils or chromium fill (also referred as chromium ore processing residue [COPR]) is located. The SOP helps protect utility workers who may encounter chromium-contaminated soils at the Site in the course of their work. Chromium-contaminated soils (also referred to as "chromium soils") refers to soils containing hexavalent chromium above the NJDEP soil criteria, currently 20 milligrams per kilogram (mg/kg or parts per million [ppm]).

The BMUA has entered into a long-term agreement with Suez Bayonne (formerly United Water) for the operation and maintenance of its water and sewer systems. Accordingly, any reference to the BMUA in terms of operation and maintenance of their system shall be interpreted as also referring to Suez Bayonne and its employees. Similarly, Honeywell uses remediation contractors and consultants and where this SOP references Honeywell, it should be understood that this includes its consultants and contractors.

This SOP addresses sewer repair or replacement performed either as part of planned maintenance work, or required as a result of an emergency situation at the Site. The procedure meets the requirements of the Consent Decree Regarding Sites 79 and 153 South, and the Consent Decree Regarding Remediation of the New Jersey City University (NJCU) Redevelopment Area, between the Hackensack Riverkeeper, Inc. (Riverkeeper or Plaintiffs) and Honeywell, filed on January 21, 2010 ("Consent Decrees") since both of the referenced Consent Decrees apply to the Site. In the event of any planned maintenance or emergency repair of its sewer pipeline at the

Site that will involve disturbance of remedial measures, the BMUA agrees to follow the steps identified in this procedure.

The SOP describes a series of steps to be taken before and during times when utility work is to be conducted by the BMUA at the Site. These steps detail requirements of Honeywell after BMUA notifies them that work is pending on the part of BMUA. The procedures contained in this document address the excavation of chromium-impacted material and safe handling methods in the event that BMUA workers and/or contractors are required to work in areas of chromium-contaminated fill. Worker safety and training requirements are addressed in an accompanying Worker Training Manual prepared by Honeywell for use by the BMUA and included as **Appendix C**.

The first step in this procedure is the determination by BMUA supervisory personnel (or BMUA representatives) that sewer utility work is going to be implemented in the Former Morris Canal Site, and the identification of the specific area within the Site where that work will be conducted. Based on the NJDEP definition of the Site, the work location could be between Danforth Avenue on the southern end and Carbon Place on the northern end of the Site (see **Figure 1**).

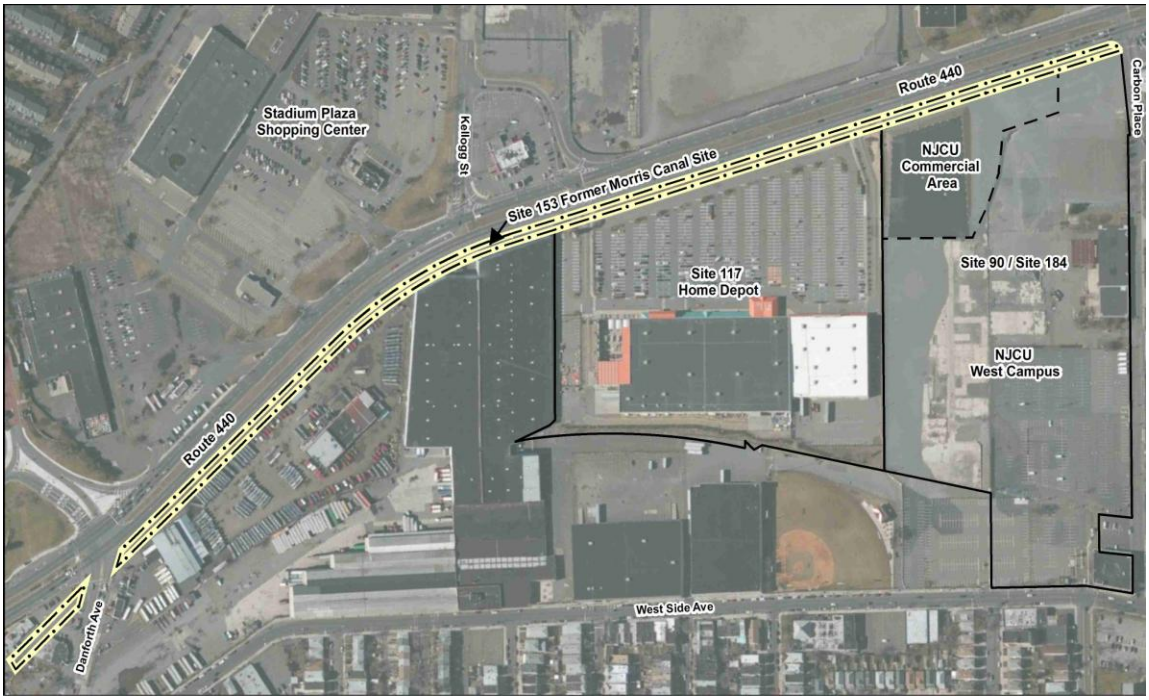


Figure 1: Former Morris Canal Site and NJCU Commercial Area

Following this internal identification and acknowledgement, BMUA notifies Honeywell using the Telephone Response System established by Honeywell ("Chromium Response Hotline") about the location and timing of work. These steps initiate the SOP process. A process flow chart for the SOP and information on key personnel are provided in **Appendix A**. Site maps are included in **Appendix B**.

Once the BMUA notifies Honeywell, through the Chromium Response Hotline, that work is required at the Site, Honeywell will provide technical assistance and coordination of field work with BMUA. For emergency utility work, BMUA will use an OSHA 40-hour trained contractor (Occupational Safety and Health Administration [OSHA] 40-Hour Hazardous Waste Operations and Emergency Response [HAZWOPER] training). This requirement is necessary because the time typically available does not allow for a case-by-case evaluation of whether the work is in an area of chromium soils, and therefore using an OSHA 40-hour trained contractor is prudent. Honeywell will cooperate with BMUA to provide field support, as needed, relating to the presence of chromium.

In a non-emergency situation, following notification of pending work, Honeywell personnel will evaluate the specific area of planned work against existing data and determine whether the area where the work will be conducted contains chromium-contaminated fill and, therefore, requires OSHA 40-hour trained personnel. In some cases, it may be necessary for Honeywell to collect samples to determine whether or not chromium impacts are present. Honeywell will communicate its conclusions to the BMUA. If the work is in a chromium containing area, Honeywell will provide technical assistance, field oversight and support, as needed, during the implementation of the sewer utility work and, if applicable, the restoration of any engineering controls.

BMUA contractor(s) will perform the excavation of materials generated during sewer work (with the exception of longer term planned sewer upgrade work which will be evaluated on a case by case basis). BMUA works with designated contractors who can provide properly trained personnel, as needed, to work in areas with chromium contamination. Honeywell will arrange for disposal of chromium-contaminated materials if required in connection with sewer work. Honeywell will provide information on specific licensed and Honeywell-approved facilities to be used for the disposal of chromium-contaminated materials and on the restoration of

engineering controls, if applicable in connection with sewer work. Financial issues and cost reimbursement are discussed in Section 3.4.

Based on past experience, the bulk of BMUA's utility maintenance work will be of the non-emergency type, with only a small fraction being emergency work. In non-emergency cases, the work would follow a schedule established between Honeywell and the BMUA following initial notification. For a non-emergency or planned sewer project, the BMUA would retain a contractor for sewer work through a public bidding process. For emergency related sewer work, the BMUA has a designated emergency services contractor and these services are subject to periodic bidding. Honeywell will provide specifications for excavation and management of chromium-contaminated materials to the BMUA for inclusion as part of its contractor bidding process for sewer work. The BMUA will retain properly trained contractor(s) to perform sewer work in areas of chromium-contaminated fill.

Honeywell will also retain an emergency response contractor with capability to respond within an approximately three-hour timeframe (which BMUA has indicated is an acceptable timeframe for response action) if needed in the event that BMUA's contractor is unable to perform excavation of chromium-contaminated soils.

In addition to being subject to the requirements identified in this SOP, the Site is also the subject of an existing institutional control (deed notice) which includes certain provisions pertaining to disturbance and restoration of engineering controls (capping), as well as notification and reporting requirements. Because areas subject to capping and deed notice must maintain their integrity to function as they were intended, work activity in such areas will require restoration of the engineering control to its pre-disturbance condition. If work is occurring in an area subject to a deed notice and will involve disturbance of engineering controls, NJDEP notification and reporting requirements will apply in addition to the process described in this SOP. A copy of the existing deed notice is provided with the Worker Training Manual. The deed notice contains a copy of the Consent Decrees.

This SOP will be followed in all applicable cases; however, this SOP cannot account for all site specific conditions and field-driven modifications to this procedure can be made upon agreement of both Honeywell and the BMUA. As a reminder to BMUA personnel, Honeywell has installed warning signs at sewer access points (manholes) to communicate the presence of contaminated soils at the Site.

Honeywell also provides annual notification letters to update stakeholders and utilities regarding conditions and activities at the Morris Canal Site and NJCU Commercial Area (located next to the northern portion of the Morris Canal Site) in accordance with the Consent Decrees. The annual notice updates include information on remedial measures, engineering and institutional controls (deed notices), and instructions to contact Honeywell prior to performing intrusive work in the area of the Site. The annual notification letters are currently sent to the following entities: NJCU, BMUA, Jersey City Fields, LLC (owner of Site 117, located next to the Morris Canal Site), Jersey City Municipal Utilities Authority, Suez Water Company, Public Service Electric and Gas Company, Comcast, Verizon, and New Jersey Department of Transportation.

This SOP is organized in the following sections:

2.0 Regulatory and Legal Section: Provides background information on the regulatory and legal basis for the development of this SOP.

3.0 Notification and Response Procedure: Describes the function of the proposed system.

3.1 Telephone Answering Service (Chromium Response Hotline): Describes the function of the "Hotline".

3.2 Honeywell Response Team: Describes the function of Honeywell's staff.

3.3 Emergency Response Contractors: Describes the function of Emergency Response Contractors.

3.4 Responsibilities: Describes roles and responsibilities of the various parties.

4.0 Identification of Chromium Soil Areas: Describes the site where this SOP applies.

5.0 Hazard Evaluation and Worker Training: Provides information regarding the health hazards that may be encountered and worker training.

2.0 REGULATORY AND LEGAL SECTION

Chromium-contaminated fill was historically used as construction fill at various sites in Hudson County, New Jersey, including portions of sewer pipelines in Jersey City. Regulatory requirements for sewer sites containing chromium fill include the NJDEP-approved Sewer Protocol, which specifies remedial action requirements that take into consideration of:

- protection of the utility;
- depth of contaminated soils; and
- land use such as the presence of public streets or highways.

For these types of utility sites, with subsurface contamination at depths greater than 3 feet, or sites situated beneath city streets or highways, capping and institutional controls in the form of a deed notice constitute the prescribed remedy. For sites (or part of sites) with shallow contamination (less than 3 feet), the prescribed remedy is either installation of an engineered capping system or removal of the top 3 feet of contaminated soils and replacement with 3 feet of clean fill underlain by a demarcation layer.

The Sewer Protocol provides protective remedial measures while minimizing invasive excavation work that could disturb or damage sewer pipelines or other utilities. The Sewer Protocol requires excavation and removal of chromium-contaminated soils if it is necessary to affect the repair or replacement of the sewer pipeline. Coordinating soil removal with sewer repair or replacement allows for removal under more controlled conditions to reduce the likelihood of incidental damage to the sewer line or disruption of sewer service. A copy of the Sewer Protocol is provided for reference in **Appendix F**.

NJDEP regulations include requirements for engineering controls (capping) and institutional controls (deed notice) as part of remedial actions. These controls are established to communicate the presence of contaminated soils and control disturbance of these soils and potential exposure to them.

Capping systems are implemented in conjunction with a deed notice to protect and prevent unauthorized disturbance of the cap. For remedial actions where residual groundwater contaminants may remain at concentrations above the NJDEP groundwater quality standards (GWQS), an institutional control for groundwater (referred to as a Classification Exception Area [CEA]) is required to communicate the presence of, and restrict the use of contaminated groundwater. A CEA for groundwater containing chromium above the NJDEP GWQS in the area of Morris Canal Site (and other adjacent sites) was approved by the NJDEP in February 2012. The CEA serves as notification that groundwater does not meet the GWQS and establishes well restrictions in the area of the CEA.

The Consent Decrees pertaining to the Morris Canal Site and NJCU Redevelopment Area (located next to the Morris Canal Site) specify requirements for Honeywell to develop a plan for training of individuals who might be exposed to chromium-contaminated soils or groundwater in conjunction with utility or other work performed at the site in conformance with OSHA rules and guidance. According to the Consent Decrees, "*BMUA shall develop a permanent plan to implement health and safety measures for its workers in accordance with OSHA rules related to hazardous materials and shall utilize the plan prepared by Honeywell setting forth the procedures and protections that BMUA shall employ when it conducts activities at Site 153."* See Consent Decree Regarding Sites 79 and 153 South, Paragraphs 72 and 77; and Consent Decree Regarding Remediation of the New Jersey City University Redevelopment Area, Paragraphs 83 and 85.

The Worker Training Manual addresses worker protection requirements including training of workers for protection from exposure to chromium-contaminated media during utility or other work performed at the Site and coordination of work between Honeywell and the BMUA and NJCU. Further information regarding the Worker Training Manual is provided in Section 5.

This SOP provides details for the coordination between Honeywell and the BMUA of work involving the force main sewer pipeline at the Morris Canal Site. The notification and response procedure, coordination of work, key personnel and responsibilities for SOP implementation are described in the following section.

3.0 NOTIFICATION AND RESPONSE PROCEDURE

The following procedure guides work that will take place on the BMUA force main located within the Morris Canal Site in Jersey City (refer to Section 4 for site information). Fundamental to the process is the obligation that BMUA notify Honeywell if pending work is to be conducted at the Site so that Honeywell can take appropriate actions that will enable the BMUA to conduct its work in a safe manner.

The notification and response procedures described in this document involve collaborative work between Honeywell, BMUA and their respective representatives, and requires specific actions to be taken by each party. The success of this procedure will depend on the collaboration and full understanding of the procedure. A detailed activity flow process is presented in **Appendix A**: **Notification and Response System Flow Chart**. A simplified process flow illustration follows:

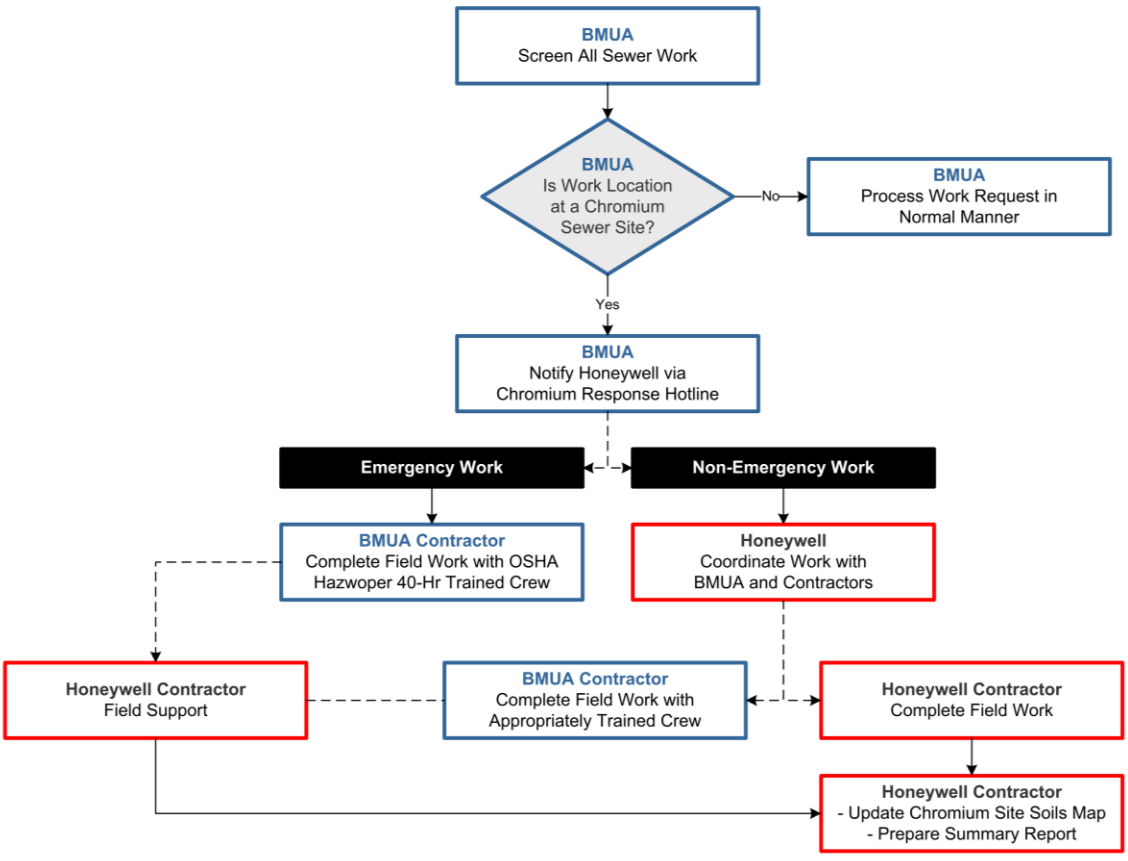


Illustration 1 SOP General Process Flow Summary

BMUA has established a checkpoint into its work order process that enables it to identify when work will occur on the Site. The procedure described in this section is initiated by the BMUA supervisor or BMUA's designated representative. Initiation of the process starts with a call to Honeywell's telephone answering service ("Chromium Response Hotline" or "Hotline") for Honeywell to respond. The Hotline is the single point of notification through which pending work will be reported. A detailed activity process flow chart is presented in **Appendix A-1** (Notification and Response System Flow Chart) and contains details regarding work identification, notification, coordination, and reporting requirements. The location of the work area can be made by a BMUA responsible individual by referring to the figures in **Appendix B** (Morris Canal site maps showing engineering controls)**.**

The Chromium Response Hotline operates in a manner similar to the New Jersey One-Call utility mark-out notification. Following determination that work will be performed at the Site, the BMUA will contact the Chromium Response Hotline to report that work will be undertaken, specify the location, identify whether the work is emergency or routine maintenance, and provide information regarding the caller and pertinent contact information. For scheduled maintenance work, it will be necessary to indicate the projected timeframe for conducting the work. Based on the reported information, the Chromium Response Hotline will generate a report using appropriate templates for emergency or non-emergency situations, and will proceed to make notifications to designated Honeywell individuals (Honeywell Response Team list included in **Appendix A-2**). If BMUA is contacted by other parties regarding work at the Site, BMUA will notify Honeywell for coordination of work with other parties.

The process for emergency and non-emergency work is further described below.

Emergency Work

For emergency sewer work at the Site, the BMUA will be required to use OSHA 40-hour personnel as the timing typically will not allow for a determination as to whether the work location is in a chromium-impacted area. Therefore, for this procedure, all emergency work will be conducted in this manner. Honeywell will provide technical assistance and field support as needed in cooperation with the BMUA. In the event that, for some reason, the BMUA is not able to respond, Honeywell will respond and will target having its emergency response contractor

onsite within an approximately three (3) hour timeframe (to be coordinated in consultation with the BMUA). Honeywell and/or BMUA will provide notification to Plaintiffs as soon as feasible following any emergency or unplanned disturbance.

Non-Emergency Work

For non-emergency work, after determining that it will conduct work on the Site, the BMUA must identify the type of work, specific location, and timing of the planned work. The determination on whether the area may have chromium contamination will be made by Honeywell after BMUA notification to the Chromium Response Hotline. Any utility work at or adjacent to the Site should be identified even if the work is not within the defined Site boundary. In some situations it may be necessary for Honeywell to go to the work area and make a visual inspection or collect samples to determine whether or not chromium impacts are present. If Honeywell determines that the work will occur in a chromium impacted area, it will notify the BMUA that the work will require properly trained contractor(s). The BMUA will then proceed with the work using properly trained contractors.

Completion of a Subsurface Work Authorization Form ("Dig Permit") checklist is required prior to any subsurface work by BMUA and/or its contractors. The Dig Permit is intended to facilitate coordination with Honeywell prior to conducting utility work or any other work that may potentially disturb the engineering controls and is a pre-requisite for any planned subsurface work at Site 153. The Dig Permit Form will be included as an attachment to the Worker Training Manual, the LTMP for NJCU/Site 153 North and the LTMP for Sites 79/153 South.

The BMUA will also notify Plaintiffs of the planned action(s) involving disturbance of remedial measures and the date(s) for the planned action in conformance with the requirements of the Consent Decrees. Honeywell will provide notice to Plaintiffs and any stakeholders regarding planned actions and safety measures pursuant to the Consent Decrees; stakeholders include property owners/tenants at or adjacent to the eastern side of the Morris Canal Site and any entity that has a utility easement on the Morris Canal Site. Notification to the Plaintiffs by the BMUA and/or Honeywell be at least five days before any planned disturbance of the engineering controls (in the event that work does not begin on the scheduled date, Plaintiffs will be notified but will not be guaranteed five days notice of the new date). BMUA and Honeywell will provide a schedule of activities to Plaintiffs (including six-month

forward look-ahead). Plaintiffs may have their technical consultants observe the field work.

Honeywell and BMUA have agreed that BMUA's contractor will perform excavation, sewer repair or replacement, backfilling and site restoration (with the exception of possibly longer term, planned sewer upgrade work). If work is in a chromium-impacted area, Honeywell will provide technical assistance, field oversight and support, as needed, during the sewer utility work and, if applicable, soil disposal and restoration of engineering controls. Backfilling and site restoration will require the placement of clean fill in accordance with BMUA specifications as well as NJDEP and Consent Decree requirements (including the NJDEP Fill Material Guidance; last updated April 2015). The Consent Decree requirements for clean fill brought onto the Site specify hexavalent chromium concentrations less than the more stringent of (i) a formal New Jersey soil standard for unrestricted use or (ii) 1 mg/kg. See Consent Decree Regarding Remediation of the New Jersey City University Redevelopment Area, Paragraph 69(a); Consent Decree Regarding Sites 79 and 153 South, Paragraph 52.

If the area is subject to a deed notice, restoration of the area will involve replacement in kind of the pre-existing engineering controls which may include clean fill, geotextile liner, landscaping and/or paving. Site backfill and restoration work may also include measures (e.g., placement of geotextile liner along the sides of excavation zone) to prevent recontamination of new fill from surrounding contaminated fill, to the extent practicable and allowable by the BMUA. Existing capped areas and engineering controls are indicated on site maps in **Appendix B**.

In some cases, it is possible that Honeywell's contactor may take the lead on field work or a portion of the field work, to be determined on a case by case basis in cooperation with the BMUA. For example, possible situations where Honeywell's contractor may take the lead on field work would be an emergency situation where BMUA's emergency services contractor could not provide properly trained workers in a timely manner for some unforeseen reason, or a non-emergency planned project where there is a mutual agreement between Honeywell and the BMUA for Honeywell's contractor to take the lead on the field work or a specific portion of the field work (e.g., Honeywell's contractor completes excavation/disposal of chromium materials and/or replacement of engineering controls while BMUA's contractor completes sewer-related repair or replacement work).

It is possible that removal of COPR and/or chromium-impacted soils beyond the initial identified sewer repair work area may be performed, to be determined on a case-by-case basis and coordinated between Honeywell and the BMUA. Such additional remediation may be performed to coordinate work under existing permits and/or other measures (i.e., traffic control) as part of the sewer repair project.

As a last step in the process, Honeywell will update the chromium soil area site map by incorporating the changed conditions of the area subject to the work.

Key components of the notification and response system are described in the following sections. Additional activities and administrative controls for the Morris Canal Site include periodic cap inspections by Honeywell as specified in the Deed Notice and Long Term Monitoring Plan, and periodic communications via calls or meetings with the BMUA regarding any upcoming work at the Morris Canal Site.

3.1 TELEPHONE ANSWERING SERVICE ("CHROMIUM RESPONSE HOTLINE")

Honeywell has established a contracted telephone answering service (Chromium Response Hotline: **855-727-2658**) to provide 24-hour coverage of notifications received from the BMUA. The answering service will record and relay to Honeywell the name of the person initiating the call on behalf of the BMUA, contact information, planned excavation location(s), expected start date, and the nature of the work (emergency or non-emergency). The Hotline has appropriate scripts and templates for the answering service personnel, so that incoming calls can be addressed appropriately. In addition, Honeywell has provided and will maintain a list of contacts, chain-of-command and telephone-chain so that incoming notifications can be routed to appropriate personnel for response in a timely manner.

After receiving a report through the Chromium Response Hotline, the answering service will contact the designated Honeywell representatives via email, text and telephone.

3.2 HONEYWELL RESPONSE TEAM

Honeywell will provide qualified personnel to respond to the BMUA notifications. As necessary, the person(s) responding to the notification of pending BMUA work

will assess existing information to determine whether the proposed work is in an area of known or suspected chromium-contamination. The person responding will coordinate as necessary with other Honeywell staff, the BMUA and appropriate contactor staff to conduct work in accordance with procedures contained in this document. The Honeywell representative will visit the proposed work location and assess visually whether there is an indication of chromium impacted fill or collect samples, if necessary.

As part of the program, a Health and Safety Plan (HASP) will be implemented during field work activities. Existing HASP documents have been developed by Honeywell's contractors for site investigation and remedial action field work involving chromium-contaminated fill and include provisions for worker safety, community health and safety, and emergency response procedures.

3.3 EMERGENCY RESPONSE CONTRACTORS

The BMUA will retain an emergency response contractor with properly trained workers and equipment necessary to perform sewer work in areas of chromium-contaminated fill. Honeywell will provide specifications for excavation and management of chromium-contaminated materials to the BMUA for inclusion as part of its contractor bidding process for sewer work. Draft specifications and a list of specific licensed facilities for disposal of chromium-contaminated materials are provided for reference in **Appendix D**.

Honeywell will also retain one or more emergency response contractors that have the labor and equipment necessary to respond promptly in the case of an emergency if needed and in situations where the BMUA contractor may not be able to respond. The contractor(s) will have 24-hour response capability. Based on input from the BMUA and for the purposes of this SOP, an emergency is considered to be an unforeseen sewer-related problem that requires action including on-site response within three (3) hours of notification to Honeywell by the BMUA.

In the case of an emergency notification by BMUA where it is requested that Honeywell's emergency response contractor is needed to perform field work or other technical support, Honeywell will contact its emergency services contractor and make provisions to have the contractor on-site within three (3) hours of the call. The Honeywell contractor will contact BMUA and provide appropriate contact information and a time estimate for arrival of the emergency response contractor.

The contractor will be responsible for excavating in the areas where BMUA needs to implement its work, and will make appropriate arrangements for the disposal of chromium-contaminated material, if required in connection with sewer work. The contractor will also be responsible for providing clean fill and restoring engineering controls. For emergency response cases, BMUA's contractor will generally take the lead in completing the field work activities. In some cases, Honeywell's contractor may take the lead in performing field work or a portion of the field work (i.e., transportation and disposal of chromium contaminated materials, restoration of engineering controls), to be determined on a case by case basis in coordination with the BMUA.

3.4 RESPONSIBILITIES

Telephone Answering Service (Chromium Response Hotline): Will receive all notifications from the BMUA and/or its designated contractor informing Honeywell of expected work at the site subject to this procedure. The answering service will obtain information from the calling party regarding work location, timing of work, whether the work is emergency or non-emergency, and the identity of the BMUA representative and contact information. The service will contact a responsible individual within the Honeywell Response Team.

Honeywell Remediation Director (or assigned personnel): Responsible for supporting the overall function of the system; and will have final approval authority for the development and revision of the SOP and its application to the BMUA force main at the Morris Canal Site.

Honeywell Remediation Manager: Responsible for implementation of procedures in accordance with the SOP including retaining contracted services, communicating with project personnel for proper coordination and documentation of the work, and providing for notifications to the NJDEP, Plaintiffs and stakeholders, as applicable.

Honeywell Project Personnel: Responsible for the implementation of SOP requirements, including providing an assessment to the entities submitting notice of intent to perform work at the Site, that chromium-contaminated fill is or is not present at the work site. Project personnel will provide field support and technical assistance as needed prior to and during the proposed work, and after completion of

the work and document all information in a field log book. Project personnel will also be responsible for updating the chromium soils site maps and preparing summary reports following completion of field work.

Honeywell Emergency Response Contractor: Responsible for responding to emergency situations when requested by Honeywell in consultation with the BMUA. As part of the response, the contractor will be prepared to address all chromium-contaminated media including offsite transportation and disposal, and coordinate work with BMUA's project personnel and contractor as may be required for sewer work. In addition, the emergency response contractor will be responsible for developing a Health and Safety Plan (including emergency response procedures) for its workers. Non-emergency type work may also be conducted by the emergency contractor (or another contractor), to be determined by Honeywell based on the projected schedule and consultation with BMUA project personnel.

BMUA Supervisor/Superintendent: Responsible for retaining appropriate contracted services as indicated in the SOP, checking the proposed sewer work location on the chromium soils site maps, providing notification to Honeywell in the event of any sewer utility work at the Site, including notification to the Chromium Response Hotline, and providing notification to Plaintiffs regarding planned actions and timing for sewer work involving disturbance of remedial measures.

BMUA Project Personnel/Contractors: Responsible for coordinating sewer work with Honeywell's project personnel and contractor, as applicable. BMUA's employees (designated supervisory and field staff) will be required to have appropriate training as indicated in Section 5 and specified in the Worker Training Manual. BMUA personnel are not expected to conduct ground-intrusive work (e.g., digging, drilling, and excavation) in areas of chromium-contaminated soil. It is expected that BMUA's contractor(s) will perform the field work involving removal of chromium-contaminated soils and site restoration in conjunction with sewer repair or replacement work. BMUA's contractor performing field work will be required to have applicable health and safety training as indicated in the Worker Training Manual.

BMUA Rules and Regulations: All sewer-related work must comply with BMUA's Rules and Regulations, which include standard material specifications including backfill and restoration requirements. Backfill requirements include

providing clean fill certification, laboratory analysis results, and specific requirements for compaction. A copy of BMUA's Rules and Regulations pertaining to site work, excavation, backfill and restoration are provided for reference in **Appendix E**.

The SOP notification and response system flow chart and Honeywell Response Team key personnel and contact information (phone numbers, email addresses) are included in **Appendix A.**

Cost Reimbursement: Financial issues and cost reimbursement details will be addressed through a separate agreement and escrow account between Honeywell and the BMUA. Honeywell will reimburse the BMUA for the need to employ OSHA 40-hour trained personnel as required by this SOP. Honeywell will also pay for costs associated with the transportation and disposal of chromium soils, as applicable on a project specific basis.

4.0 IDENTIFICATION OF CHROMIUM SOIL AREAS

This document applies to the following site containing chromium-impacted fill:

- Former Morris Canal referred to as NJDEP Site 153 (BMUA Force Main) located in Jersey City

Site maps are provided in **Appendix B**. The site maps include figures from the deed notice showing areas of soil contamination and engineering controls. In addition to the engineering controls, access point warning signs were installed within sewer manholes to communicate the presence of COPR or chromium contaminated soils and prevent contact with such soils. Honeywell will also provide survey coordinates for the Morris Canal Site for use by the BMUA and incorporation into its existing Geographical Information System (GIS) sewer mapping system.

The presence of chromium impacted soil or fill may be indicated as gray-black granular material, yellow-green colored staining, reddish-brown nodules in soils, or extremely hard layers of dark brown soil. Chromium-impacted groundwater may be indicated by yellow-green colored water. Fill soils may also contain other contaminants that are commonly associated with historic fill and unrelated to COPR fill, such as polycyclic aromatic hydrocarbons (PAHs) and metals. Site background information is provided in the following sections.

4.1 MORRIS CANAL SITE – JERSEY CITY

The information in this section serves as background information for the Morris Canal Site.

The Morris Canal Site is the location of the BMUA force main and consists of a narrow strip of land (25 feet approximate width) located along the eastern side of Route 440 between Carbon Place and Danforth Avenue in Jersey City (see **Appendix B-1**: Figure 1 Site Location Map). The Site is also referred to by the NJDEP as Site 153 and includes land adjacent to the current Home Depot retail center and the New Jersey City University, West Campus. The Morris Canal Site contains various utility lines including a 36-inch diameter sanitary sewer force main operated by the BMUA.

The former Morris Canal site of interest here was a small segment of the original Morris Canal, which operated from the 1860s to the early 1900s. COPR was allegedly used to fill portions of the canal during its closure between 1924 and 1935. The BMUA force main is constructed of concrete encased PCCP (pre-stressed concrete cylinder pipe), with depths to the top of the pipeline ranging from just below the surface pavement (next to NJCU and Home Depot) to approximately 4 to 6 feet below grade (south of Home Depot). The force main conveys sewage from the City of Bayonne for ultimate treatment at Passaic Valley Sewerage Commission facility in Newark. Other utilities along portions of the site include electric, gas, storm sewer, water, and telephone lines that provide service to adjacent commercial properties.

Remedial investigation work to assess the presence of chromium impacts in both soils and the groundwater has been completed. Remedial actions were completed in 2009-2011 and are summarized as follows:

Adjacent to the NJCU site, engineering controls included 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 in the eastern portion (east of the force main). Remedial actions were documented in the Remedial Action Report for the NJCU site dated September 2012.

Adjacent to and south of the Home Depot site, remedial actions consisted primarily 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;
- restoration of soil vegetative or asphalt cap consistent with pre-remediation surface types; and
- re-pavement or replacement of existing asphalt.

Engineering controls include a combination of clean fill/vegetative cover and asphalt pavement. Remedial actions for this portion of the property were documented in interim remedial measures reports dated October 13, 2010 and November 26, 2013.

The remedial measures and engineering controls are indicated on site maps in **Appendix B-2**. As-built figures for the remedial actions are included for reference in **Appendix B-3**. Site maps will be updated if needed based on results of any future sampling or remedial actions.

A Deed Notice associated with the engineering controls was recorded by the Hudson County Register of Deeds on November 30, 2010. A modified Deed Notice will be recorded to reflect the completed remedial actions and current NJDEP model deed notice format. A copy of the existing Deed Notice is provided for reference in the Worker Training Manual.

NJCU West Campus Commercial Area

The NJCU West Campus Commercial Area of Concern (AOC) is located alongside the eastern boundary of Site 153 North (east of the BMUA force main).

Remedial actions for the Commercial AOC included installation of engineering controls consisting of a multi-layered cap with 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); and
- orange demarcation warning layer and clean soil cover (minimum 1-foot in paved areas, 2 feet in landscaped areas, and 3 feet in tree planting areas).

The warning layer consists of an orange colored geotextile material with markings in English and Spanish to prevent penetration of the underlying cap materials.

Remedial actions also included focused soil excavation to allow for clean utility corridors for site redevelopment with new utilities to be installed above the cap within the Commercial AOC. Therefore, future utility work in the Commercial AOC would not be expected to involve disturbance of the cap or potential exposure to chromium-impacted soils. Other remedial measures within the NJCU Commercial

AOC included the installation of a perimeter hydraulic barrier consisting of sealed sheet pile and a groundwater recovery and treatment system to be operated on a contingent basis.

In addition, Long Term Monitoring Plans (LTMPs) have been prepared for the Morris Canal Site and NJCU Commercial AOC pursuant to the Consent Decrees. Refer to the Long Term Monitoring Plans for as-built figures for the chromium remedial actions, requirements in the event of future development or other site work that may disturb the chromium remedy within the NJCU Commercial AOC, and information regarding monitoring, maintenance and reporting requirements. The LTMPs are reviewed annually and updated as needed based on changes to field conditions and/or regulatory requirements of the Worker Training Manual or other relevant project documents for the Morris Canal Site and NJCU Commercial AOC.

5.0 HAZARD EVALUATION AND WORKER TRAINING

This SOP is intended to provide information and procedures for protection of utility workers and contractors who may be performing work in areas containing chromium-contaminated soils or groundwater at the Morris Canal Site.

Potential chemical exposure pathways are:

- Inhalation of airborne dusts and mists that may contain contaminated particulates
- Skin and eye contact and absorption due to direct contact with contaminated soil, sediment, and/or liquids
- Incidental ingestion of contaminated soils, liquids, and/or particulates

Contact with known or suspected chromium-contaminated media must be avoided. Potential exposure to chromium contamination could occur by utility workers performing ground intrusive activities (e.g., drilling, digging, and excavation). Only properly trained and equipped personnel should be allowed to perform tasks that may involve the handling of known or suspected chromium-contaminated media.

As stated in previous sections, it is anticipated that BMUA personnel will not conduct activities such as excavation and disposal of chromium-contaminated materials. Such activities will be implemented by BMUA contractors or Honeywell designated contractors whether on an emergency or non-emergency basis. However, BMUA personnel must be knowledgeable and trained on the potential hazards and safety procedures to be followed when work is conducted in areas of chromium fill, as well as the safety procedures that should be followed if exposure to chromium fill occurs during normal operation and maintenance of the sewer pipeline. Accordingly, Honeywell has developed a Worker Training Manual as discussed below.

Worker Training Manual

Honeywell has prepared a Worker Training Manual in accordance with requirements of the Consent Decrees, specifically Paragraph 83 of the Consent Decree Regarding Remediation of the New Jersey City University Redevelopment Area (including Site 153 North) and Paragraph 72 of the Consent Decree Regarding

Sites 79 and 153 South (see **Appendix C**). The Worker Training Manual addresses worker protection requirements including training of workers who potentially may be exposed to COPR or chromium-impacted soils or groundwater in conjunction with utility or other subsurface work. According to the Consent Decrees, "*BMUA shall develop a permanent plan to implement health and safety measures for its workers in accordance with OSHA rules related to hazardous materials and shall utilize the plan prepared by Honeywell setting forth the procedures and protections that BMUA shall employ when it conducts activities at Site 153.*"

The Worker Training Manual contains details regarding worker training requirements and pertinent reference information regarding access point warning signs, fact sheets with information on chromium and potential health hazards, copies of deed notices, and site maps showing areas of contamination and engineering controls for the Morris Canal Site and NJCU Commercial AOC. Honeywell will provide training support to the BMUA as deemed appropriate, and BMUA will develop and implement a permanent worker training plan based on the requirements outlined in the Worker Training Manual.

Honeywell in consultation with the BMUA has identified the following training for BMUA employees that would be provided by Honeywell (or its contractor):

- Chromium Awareness Training - initial and periodic training (approximately every 3 years): estimated 1 to 2 hours duration and includes BMUA staff with responsibility for performing some level of field work.
- HAZWOPER 40-hour training and annual 8-hour refresher training: estimated to include two BMUA supervisory employees.

Honeywell will pay for the cost of the training program and the BMUA would cover the cost for the time for its employees to attend the training.

BMUA's contractors performing field work on the Site involving disturbance of engineering controls and potential for exposure to chromium soils will be required to have applicable health and safety training as indicated in the Worker Training Manual. Health and safety training requirements for BMUA contractors will be specified as part of BMUA's bidding process for sewer work and that contractors will

be required to demonstrate appropriate training documentation to the BMUA prior to performing field work at the Site.

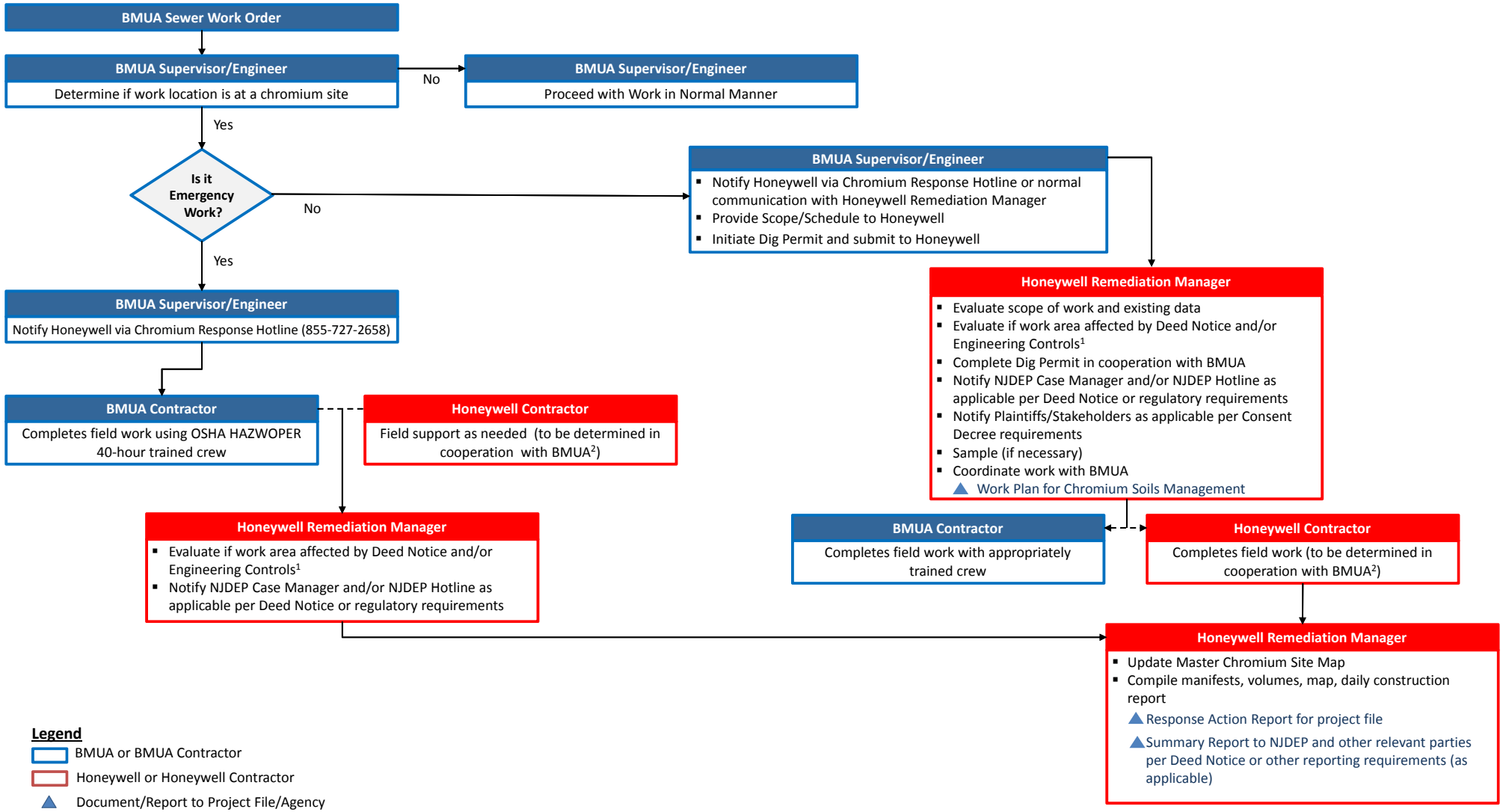
APPENDIX A

SOP PROCESS FLOW CHART/
HONEYWELL RESPONSE TEAM KEY PERSONNEL

APPENDIX A-1

NOTIFICATION AND RESPONSE SYSTEM FLOW CHART

Figure 1 Notification and Response System Flow Chart
Response Actions and Responsibilities for BMUA Projects in Areas of Chromium Sites



Legend

- BMUA or BMUA Contractor
- Honeywell or Honeywell Contractor
- ▲ Document/Report to Project File/Agency

1 See Deed Notice For Notification/Reporting Requirements

2 Refer to SOP for details on coordination and requirements for excavation and disposal of chromium soils, backfill, and site restoration. Honeywell reimbursement of BMUA for the portion of work associated with OSHA 40-hour trained crew and transportation/disposal of chromium soils

Points Of Contact:
Chromium Response Hotline: 855-727-2658 (24/7 answering service)
Honeywell Remediation Manager: Maria Kaouris 973-455-3302 (office); 862-579-8453 (cell)
BMUA Main Office Number: 201-858-6125
BMUA Sewer Operations – Suez Bayonne: John Ludington 201-215-2786; 908-966-2541 (cell)

Draft 10/21/16

APPENDIX A-2

HONEYWELL RESPONSE TEAM KEY PERSONNEL

Table 1: Notification and Response System Key Personnel
Bayonne Municipal Utilities Authority (BMUA) and Honeywell

ORGANIZATION	KEY PERSONNEL	PHONE NUMBERS	EMAIL	MAILING ADDRESS
Honeywell Emergency Response Contractor (ERTS)	Nathan Walden, VP Operations Zane Gloer, Director	**Honeywell Response #** **855-727-2658** **[rings to ERTS 24/7 #** **800-924-6804]**	nwalden@ertsonline.com zgloer@ertsonline.com	6001 Cochran Road Solon, OH 44139
Honeywell	John Morris, Remediation Director Bill Hague, Remediation Design & Construction Director Maria Kaouris, Remediation Manager John Mojka, Engineering & Construction Manager	973-455-3003 (973-727-6573 cell) 973-455-2175 (973-896-9366 cell) 973-455-3302 (862-579-8453 cell) 973-455-4252 (973-615-3782 cell)	john.morris@honeywell.com william.hague@honeywell.com maria.kaouris@honeywell.com john.mojka@honeywell.com	Honeywell 115 Tabor Road Morris Plains, NJ 07950
Honeywell Project Personnel / Consultant - Amec	Joe Clifford, Principal Engineer Ed Gaven, Principal Scientist Telly Giouzelis, Field Services Andrew Shust, H&S Coordinator Other Project Personnel TBD	973-455-4163 (610-505-9315 cell) 609-631-2905 (609-865-6959 cell) 609-631-2906 (609-865-3592 cell) 609-631-2921 (732-513-3390 cell)	joseph.clifford@amecfw.com ed.gaven@amecfw.com aristotelis.giouzelis@amecfw.com andrew.shust@amecfw.com	Amec Foster Wheeler Environment & Infrastructure, Inc 200 American Metro Blvd., Suite 113 Hamilton, NJ 08619 609-689-2829 (main office number)
BMUA	Timothy Boyle, Director [Other personnel to be provided as needed]	201-858-6125 / 201-858-6083 (M-F, 8:00 AM to 4:30 PM)	Tboyle@baynj.org	Bayonne MUA 630 Avenue C Bayonne, NJ 07002
Suez Bayonne (sewer operations and maintenance)	John Ludington, Project Manager (other personnel to be provided as needed)	Suez - Bayonne 201-215-2786 (908-966-2541 cell)	john.ludington@unitedwater.com	110 Oak Street Bayonne, NJ 07002
BMUA Consultant / Engineer - CME Associates	Rob Russo [Other personnel to be provided by CME as needed]	732-727-8000	rrusso@cmeusa1.com	CME Associates 3141 Bordentown Avenue Parlin, NJ 08859
BMUA Contractor(s)	[To be provided by BMUA]	[To be provided by BMUA]	[To be provided by BMUA]	[To be provided by BMUA]

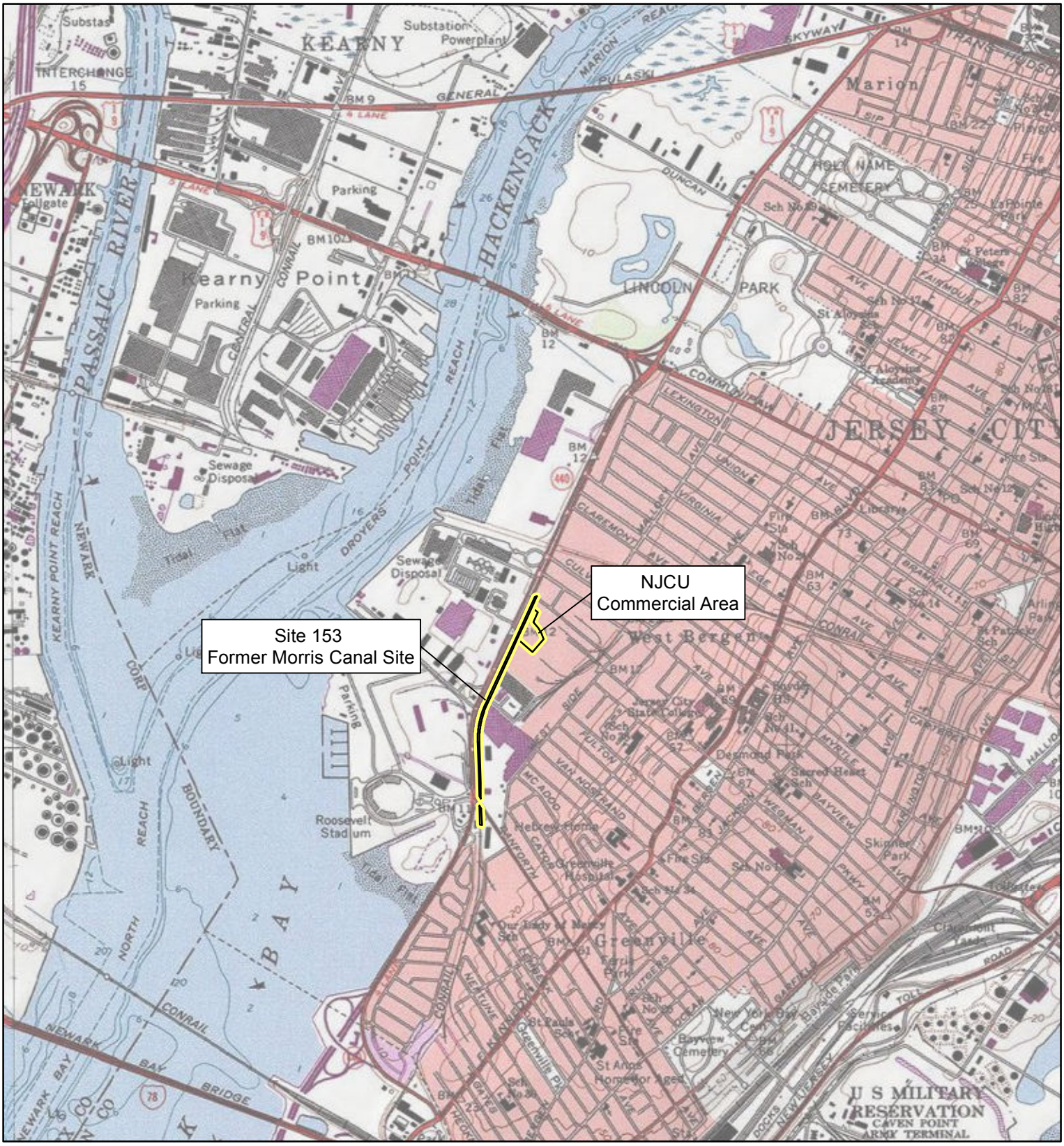
APPENDIX B

SITE MAPS

MORRIS CANAL SITE/
BMUA FORCE MAIN

APPENDIX B-1

SITE LOCATION MAP



NAD 1983 StatePlane New Jersey FIPS 2900 Feet

N

2,000 1,000 0 2,000

Scale In Feet

Legend

Site Boundary

Source:
USGS Topographic Maps, ESRI Server Map Service, 2012.

amec

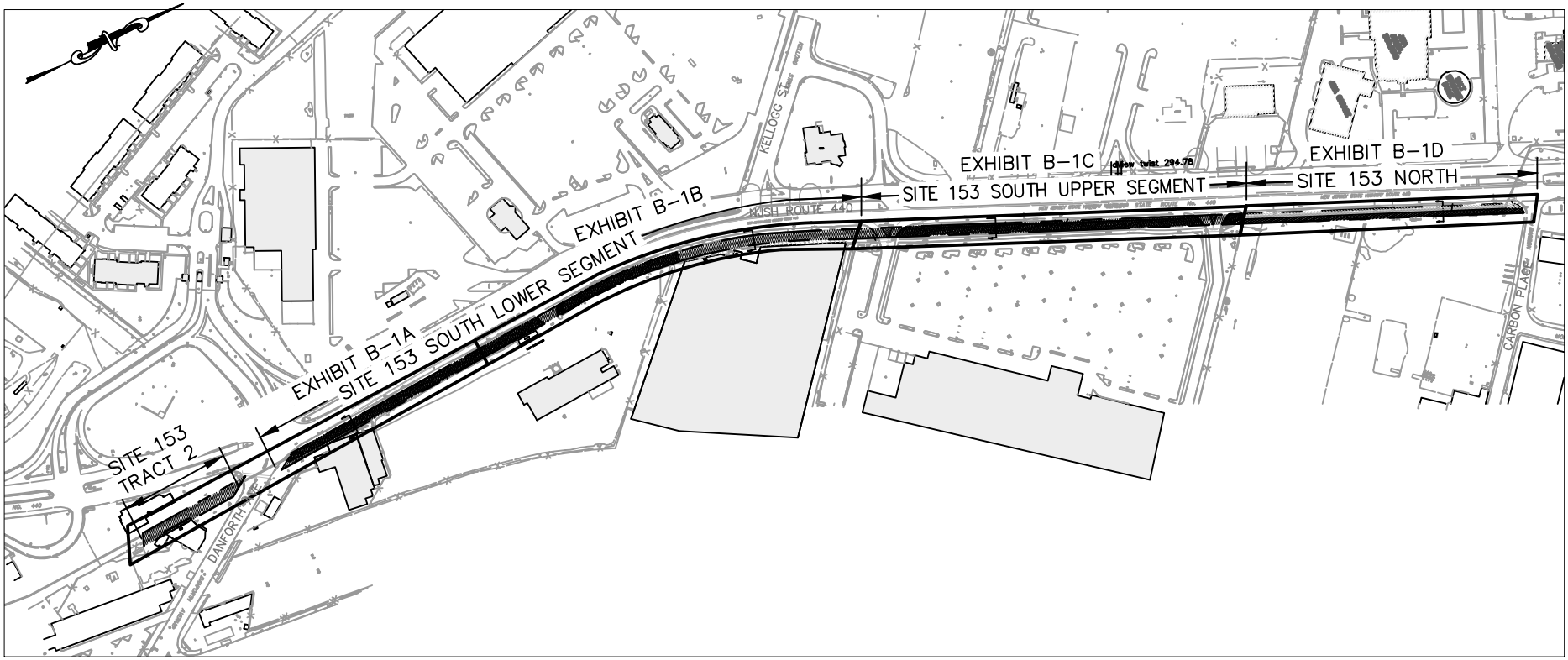
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

Figure 1
Site Location Map
Site 153 Former Morris Canal
Sites 090 & 184 NJCU Commercial Area
Jersey City, New Jersey

PROJ. NO.	3480130371		12/1/2014	REV.
DWN. BY.	WSL	CHKD BY.	EGG	

APPENDIX B-2

AREAS OF CONTAMINATION AND ENGINEERING CONTROLS



0 200 400 800

SCALE IN FEET

REV.	DATE	STATUS	DRFT BY	CHKD BY

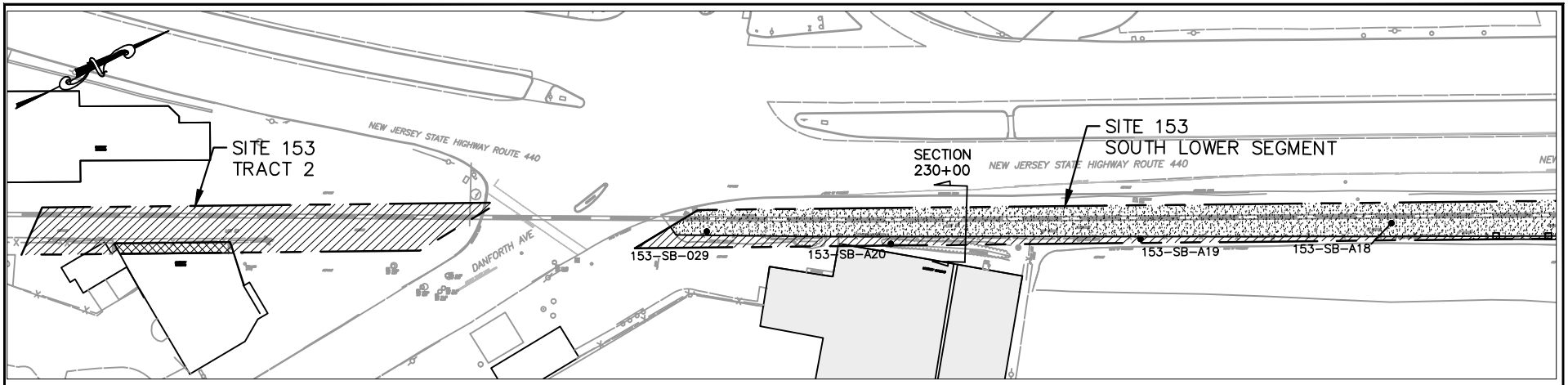
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DRAWING: 3480130379-6100-B200-0000

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

FIGURE 2
SITE MAP KEY
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5

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PLAN VIEW

0 50 100 200

SCALE IN FEET

LEGEND

153-SB-AXX — SAMPLE LOCATION

CROSS SECTION DIRECTION & LOCATION

DEED RESTRICTION AREA

BMUA FORCEMAIN

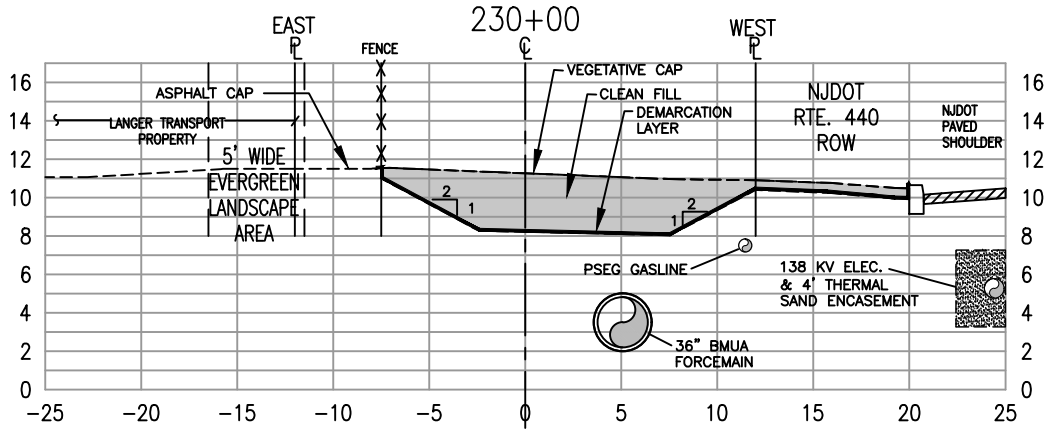
PROPERTY LINE

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

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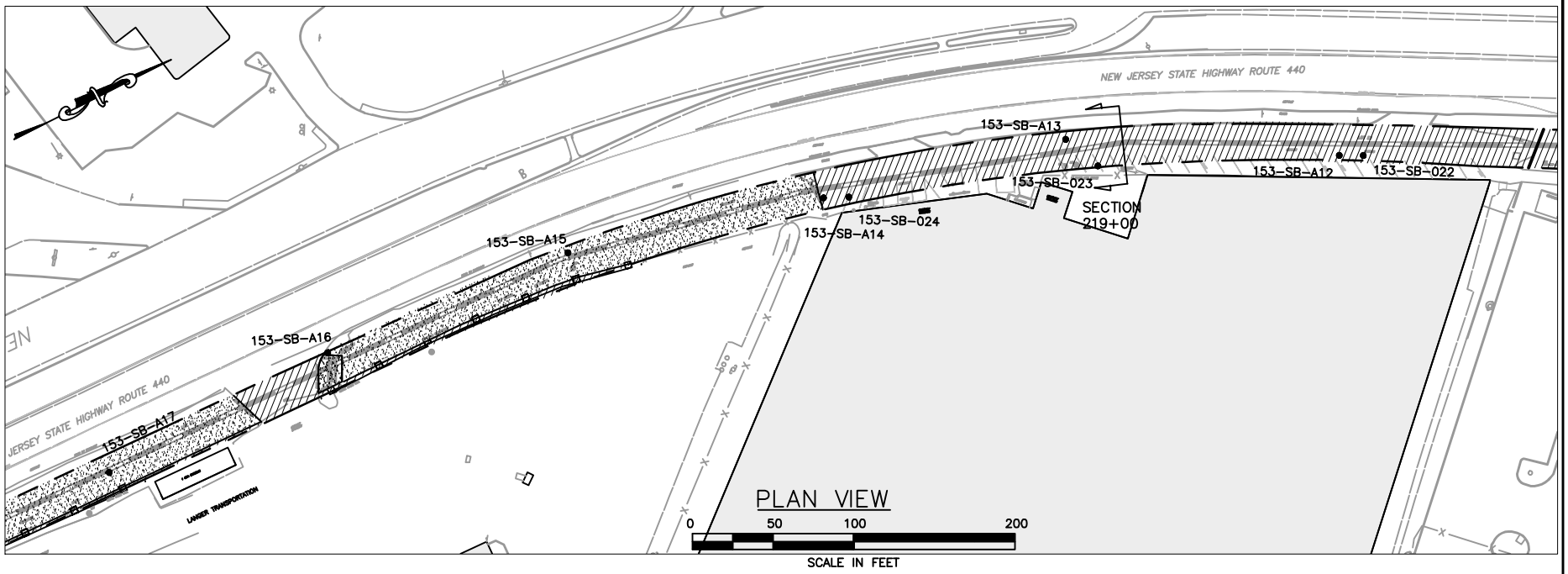
PREPARED/DATE: STR 02/27/12

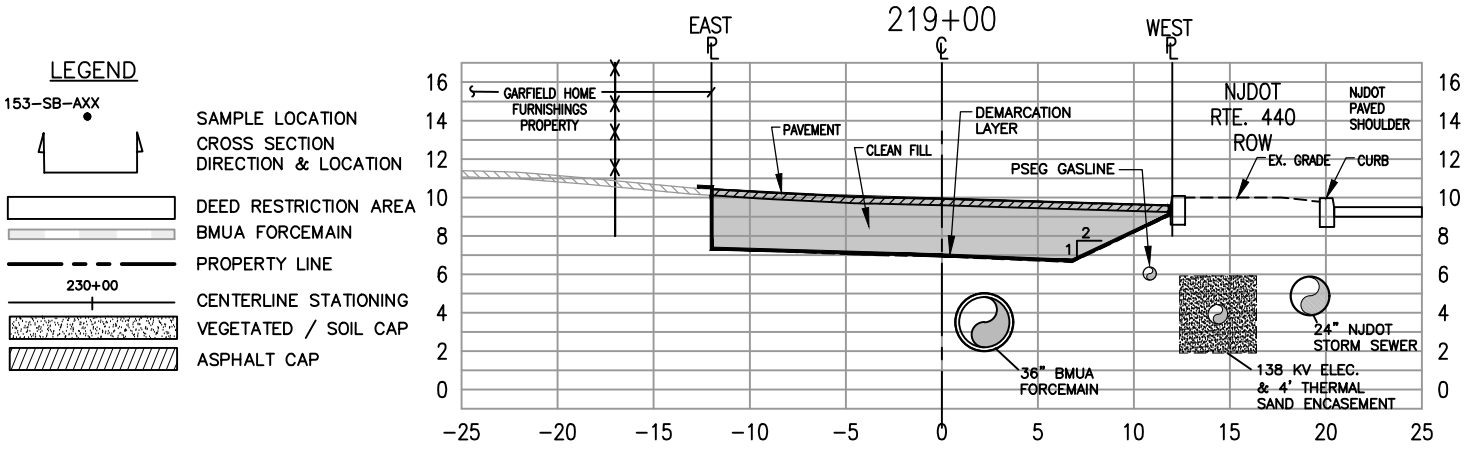
CHECKED/DATE: CMR 04/02/12

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

FIGURE 2A
SITE 153 SOUTH LOWER SEGMENT #1
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5

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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			

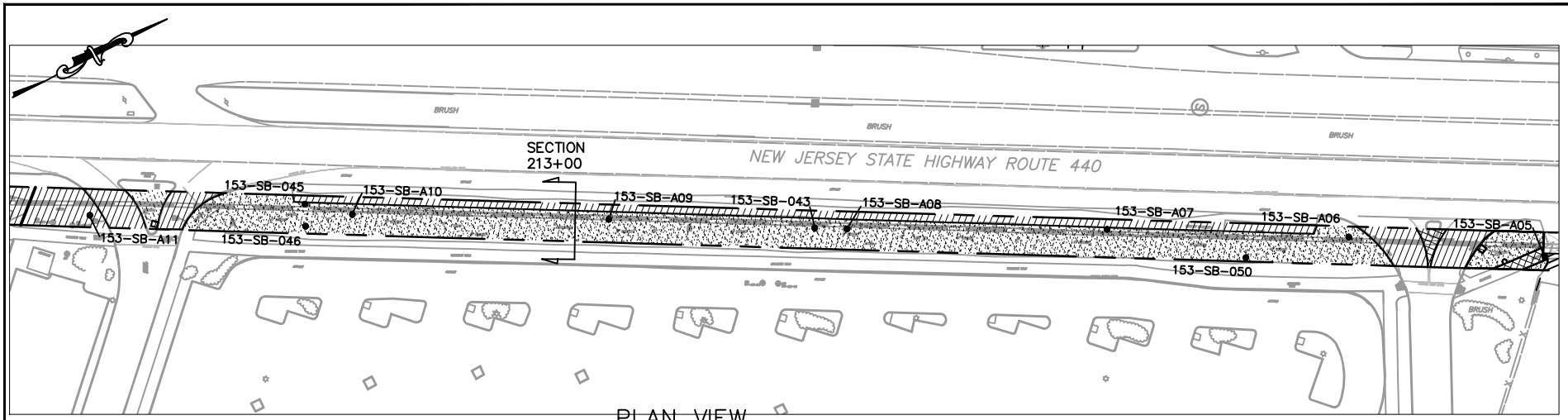
AMEC PROJ No.: 3480130370
DRAWING: 3480130379-6100-B200-0000

PREPARED/DATE: STR 02/27/12
CHECKED/DATE: CMR 04/02/12

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

FIGURE 2B
SITE 153 SOUTH LOWER SEGMENT #2
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5

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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

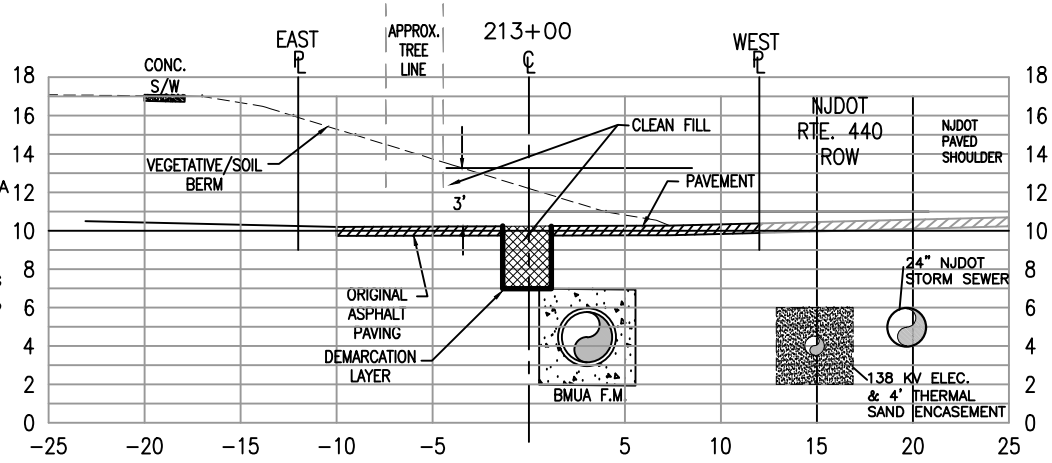
230+00 — CENTERLINE STATIONING

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.

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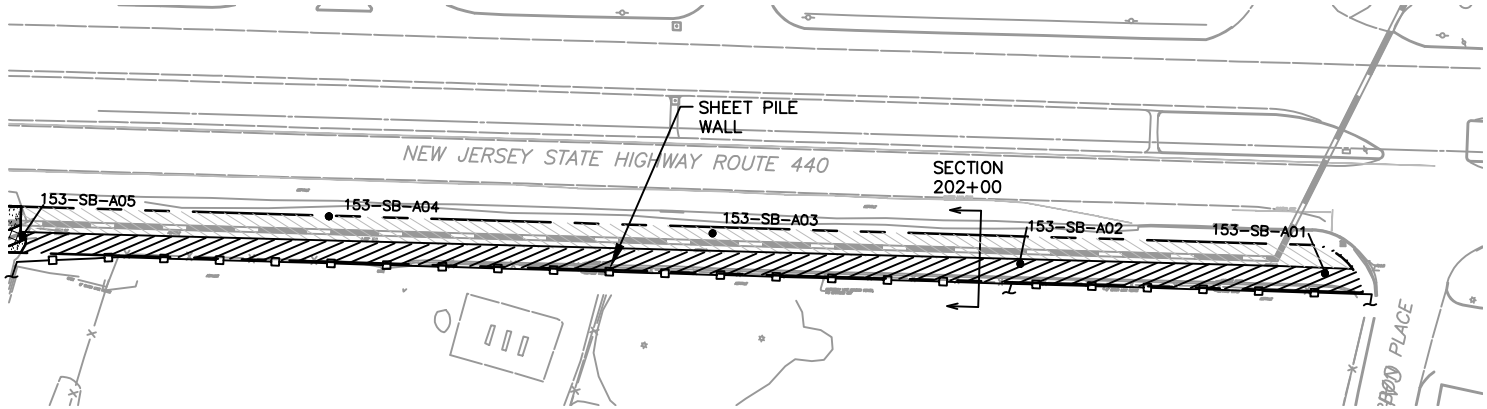
PREPARED/DATE: STR 02/27/12

CHECKED/DATE: CMR 04/02/12

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

FIGURE 2C
SITE 153 SOUTH UPPER SEGMENT
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5

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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

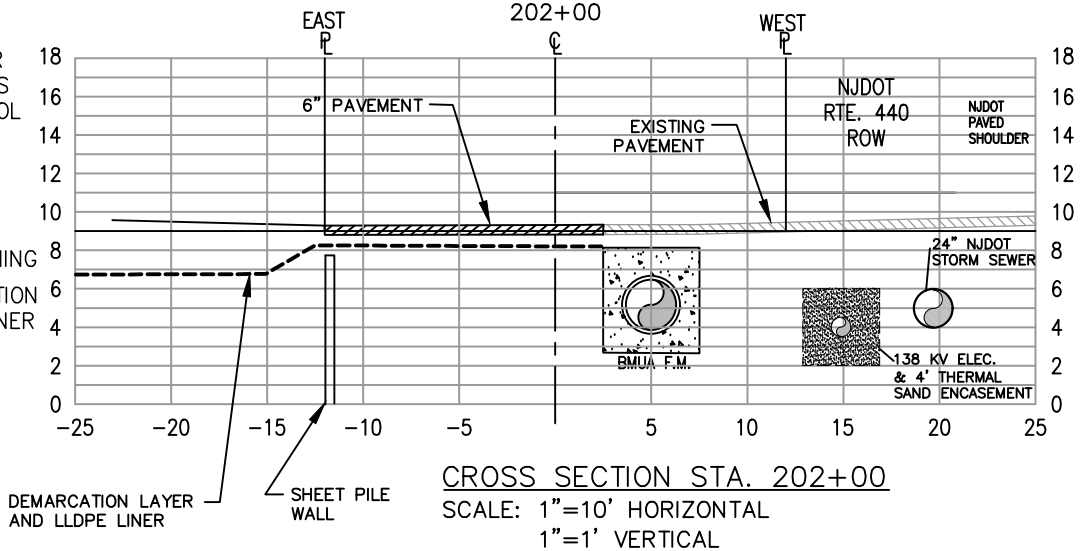
BMUA FORCEMAIN

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.: 3480130370
DRAWING: 3480130379-6100-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

FIGURE 2D
SITE 153 NORTH SEGMENT
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5

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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

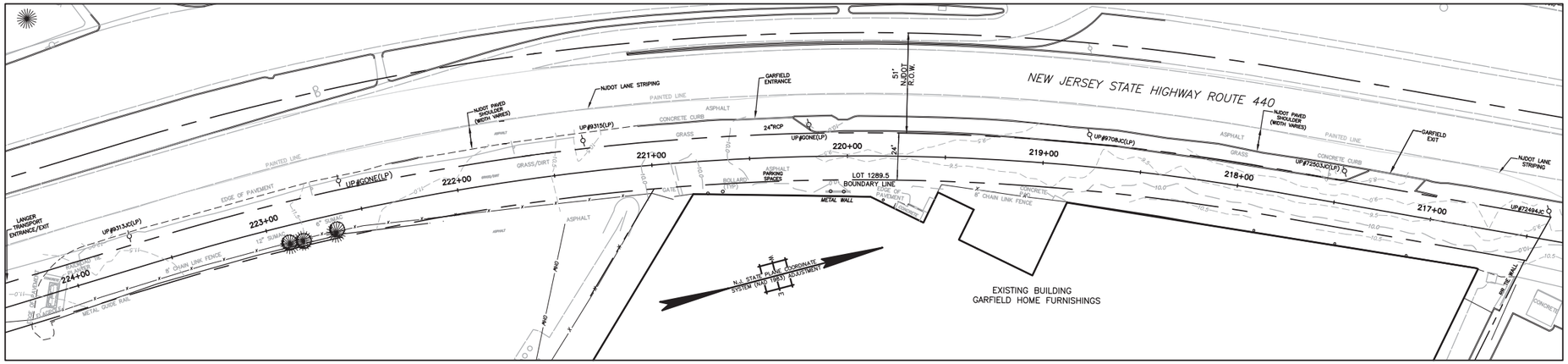
Prepared by: CMR Date: 4/20/12

Checked by: AG Date: 4/20/12

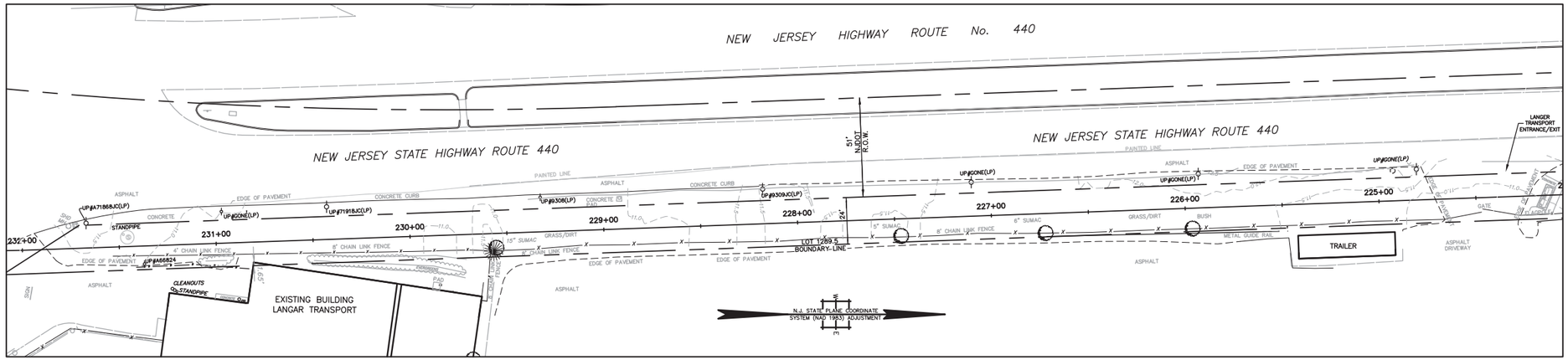
APPENDIX B-3

AS-BUILT FIGURES FOR REMEDIAL ACTIONS

PHASE II
STATIONS 216+50 TO 224+50



PHASE I
STATIONS 224+50 TO 232+00



BENCHMARK:

GPS BASE STATION
ELEVATION: 27.521
DATUM: NAVD 29

NOTES:

1. THIS IS TO CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP OR PLAN IS THE RESULT OF A FIELD SURVEY PERFORMED ON NOVEMBER 3, 2009 BY ENTACT. LLC, WITH PERIODIC FIELD SURVEY CHECKS PERFORMED BY MASER CONSULTING P.A. THE INFORMATION DEPICTED HEREON, CORRECTLY REPRESENTS THE CONDITIONS FOUND AT, AND AS OF THE DATE OF THE FIELD SURVEY, EXCEPT SUCH IMPROVEMENTS OR EASEMENTS, IF ANY BELOW THE SURFACE AND NOT VISIBLE. ACCORDINGLY THE UNDERSIGNED PROFESSIONAL IS NOT RESPONSIBLE FOR THE PRESENCE OF UNDERGROUND UTILITIES OR STRUCTURES, IF SAME ARE NOT VISIBLE OR OTHERWISE DISCLOSED BY ANY AFOREMENTIONED DATA LISTED ABOVE.

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4. SITE BENCHMARK USED: GPS BASE STATION – ELEVATION = 27.52
THE HORIZONTAL DATUM IS NAD83, THE VERTICAL DATUM IS NGVD29.

LEGEND

12 SURVEYED PRE-EXCAVATION CONTOURS

30 0 30 60
SCALE IN FEET
(1"=30')

R. THOMAS HUGG
NEW JERSEY PROFESSIONAL
LAND SURVEYOR LIC. NO. 36737

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION

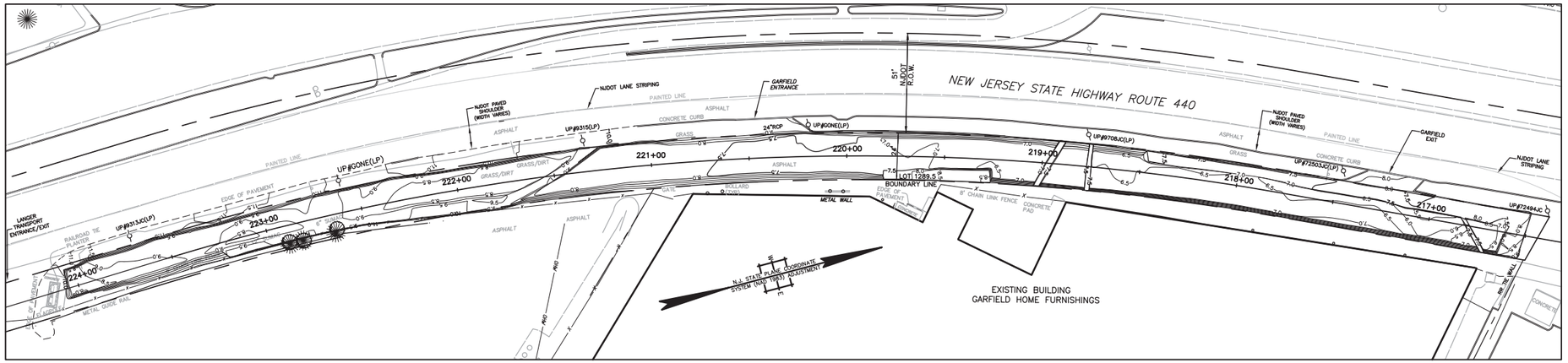
ENTACT
339 Haymaker Rd., Suite 1101
Monroeville, PA 15146
P: 412-357-1100

DRAWING NAME: FINAL AS-BUILT CONTOUR DRAWINGS
PRE-EXCAVATION SURFACE

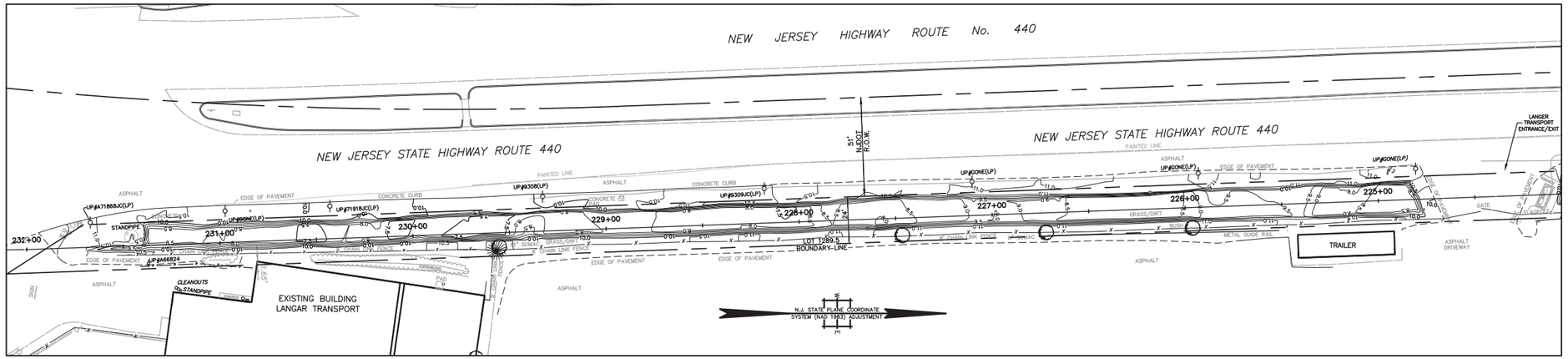
PROJECT NAME & LOCATION: HONEYWELL SA5 / SITE 153
JERSEY CITY, NEW JERSEY

PREPARED BY	J. HOUGH	CHECKED BY	C. PANICO	REVISION
DRAWN BY	J. HOUGH	APPROVED BY	C. PANICO	0
DATE	1/20/2010	DATE	1/20/2010	SHEET NO.
PROJECT NO.	D1177E	DRAWING NO.	D-1177E-001	1 OF 5

PHASE II
STATIONS 216+50 TO 224+50



PHASE I
STATIONS 224+50 TO 232+00



BENCHMARK:

GPS BASE STATION
ELEVATION: 27.521
DATUM: NAVD 29

NOTES:

1. THIS IS TO CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP OR PLAN IS THE RESULT OF A FIELD SURVEY PERFORMED ON DECEMBER 11, 2009 BY ENTACT. LLC, WITH PERIODIC FIELD SURVEY CHECKS PERFORMED BY MASER CONSULTING P.A. THE INFORMATION DEPICTED HEREON, CORRECTLY REPRESENTS THE CONDITIONS FOUND AT, AND AS OF THE DATE OF THE FIELD SURVEY, EXCEPT SUCH IMPROVEMENTS OR EASEMENTS, IF ANY BELOW THE SURFACE AND NOT VISIBLE. ACCORDINGLY THE UNDERSIGNED PROFESSIONAL IS NOT RESPONSIBLE FOR THE PRESENCE OF UNDERGROUND UTILITIES OR STRUCTURES, IF SAME ARE NOT VISIBLE OR OTHERWISE DISCLOSED BY ANY AFOREMENTIONED DATA LISTED ABOVE.

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4. SITE BENCHMARK USED: GPS BASE STATION – ELEVATION = 27.52
THE HORIZONTAL DATUM IS NAD83, THE VERTICAL DATUM IS NGVD29.

R. THOMAS HUGG
NEW JERSEY PROFESSIONAL
LAND SURVEYOR LIC. NO. 36737

LEGEND

12 — AS–BUILT POST EXCAVATION CONTOURS

——— LIMITS OF EXCAVATION

30 0 30 60
SCALE IN FEET
(1"=30')

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION

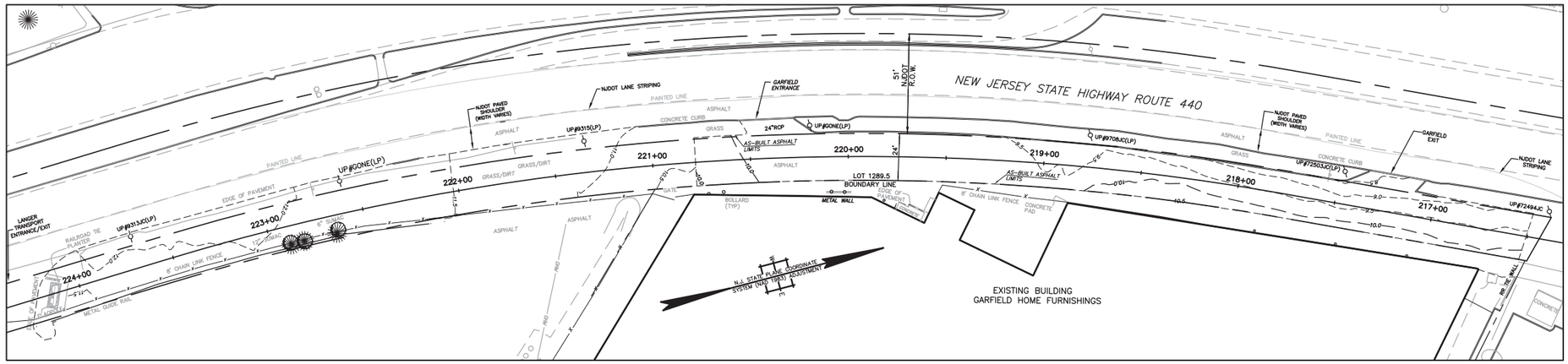
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Monroeville, PA 15146
P: 412-357-1100

DRAWING NAME: FINAL AS–BUILT CONTOUR DRAWINGS
POST–EXCAVATION SURFACE

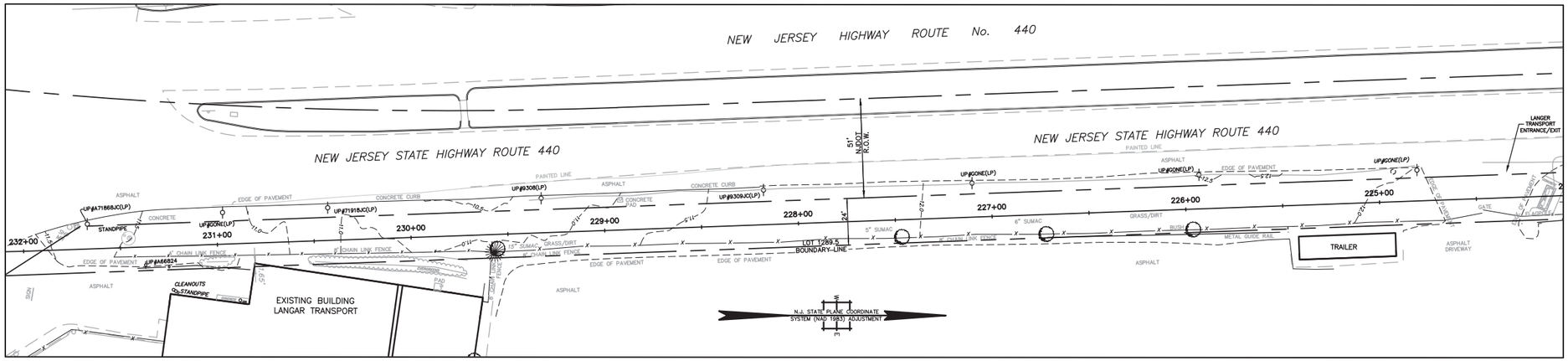
PROJECT NAME & LOCATION: HONEYWELL SA5 / SITE 153
JERSEY CITY, NEW JERSEY

PREPARED BY	J. HOUGH	CHECKED BY	C. PANICO	REVISION
DRAWN BY	J. HOUGH	APPROVED BY	C. PANICO	0
DATE	1/20/2010	DATE	1/20/2010	SHEET NO.
PROJECT NO.	D1177E	DRAWING NO.	D-1177E-001	2 OF 5

PHASE II
STATIONS 216+50 TO 224+50



PHASE I
STATIONS 224+50 TO 232+00



BENCHMARK:

GPS BASE STATION
ELEVATION: 27.521
DATUM: NAVD 29

NOTES:

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4. SITE BENCHMARK USED: GPS BASE STATION – ELEVATION = 27.52
THE HORIZONTAL DATUM IS NAD83, THE VERTICAL DATUM IS NGVD29.

R. THOMAS HUGG
NEW JERSEY PROFESSIONAL
LAND SURVEYOR LIC. NO. 36737

LEGEND

12 FINAL TOPSOIL AS-BUILT CONTOURS
12 FINAL ASPHALT AS-BUILT CONTOURS

30 0 30 60
SCALE IN FEET
(1"=30')

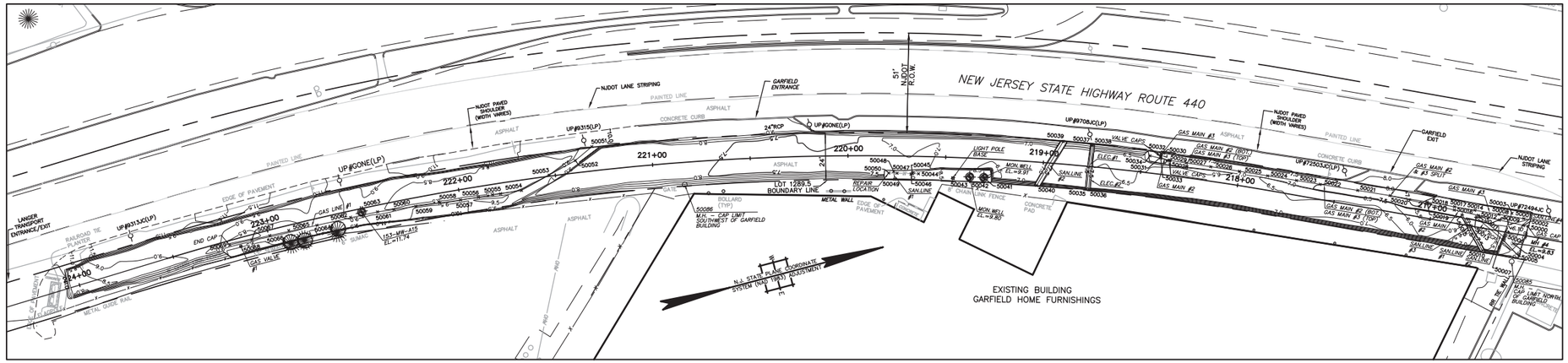
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P: 412-357-1100

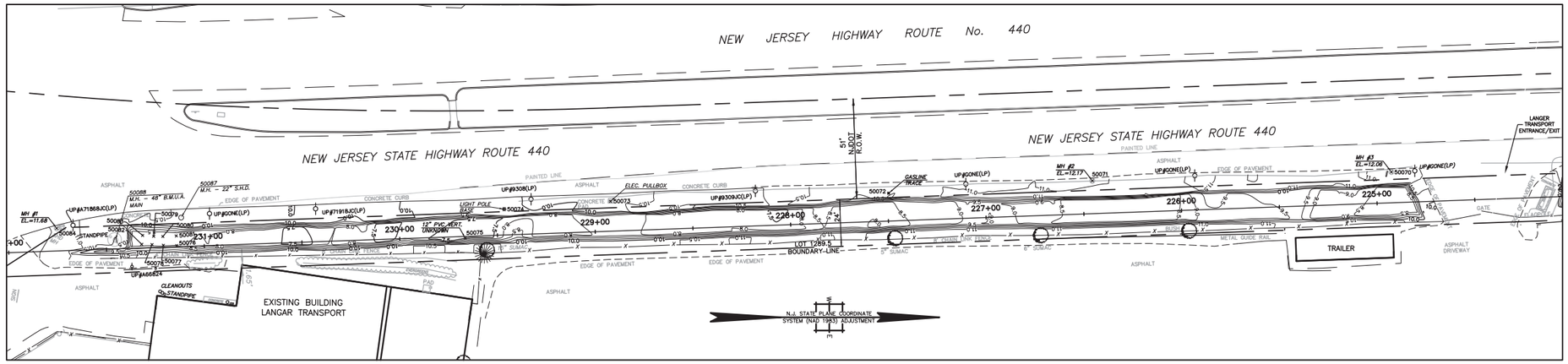
DRAWING NAME: FINAL AS-BUILT CONTOUR DRAWINGS TOPSOIL AND ASPHALT SURFACES
PROJECT NAME & LOCATION: HONEYWELL SA5 / SITE 153 JERSEY CITY, NEW JERSEY

PREPARED BY	J. HOUGH	CHECKED BY	C. PANICO	REVISION
DRAWN BY	J. HOUGH	APPROVED BY	C. PANICO	0
DATE	1/20/2010	DATE	1/20/2010	SHEET NO.
PROJECT NO.	D1177E	DRAWING NO.	D-1177E-001	3 OF 5

PHASE II
STATIONS 216+50 TO 224+50



PHASE I
STATIONS 224+50 TO 232+00



BENCHMARK:

GPS BASE STATION
ELEVATION: 27.521
DATUM: NAVD 29

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4. SITE BENCHMARK USED: GPS BASE STATION – ELEVATION = 27.52
THE HORIZONTAL DATUM IS NAD83, THE VERTICAL DATUM IS NGVD29.

R. THOMAS HUGG
NEW JERSEY PROFESSIONAL
LAND SURVEYOR LIC. NO. 36737

LEGEND

- 12 — AS-BUILT POST EXCAVATION CONTOURS
- LIMITS OF EXCAVATION
- GAS LINES AND AS-BUILT POINTS
- SANITARY LINES AND AS-BUILT POINTS
- ELECTRIC LINES AND AS-BUILT POINTS
- WATER LINES AND AS-BUILT POINTS
- WELLS, MANHOLES, OTHER OBJECTS
- X 50043 POINT NUMBER FOR UTILITY LOCATIONS (SEET SHEET NO. 5 OF 5)

30 0 30 60
SCALE IN FEET
(1"=30')

REV	DATE	BY	CH'CD	APR'VD	DESCRIPTION
1.	3/30/10	D.J.M.	RTH		ADDITIONAL UTILITY LOCATIONS INCLUDED

ENTACT
339 Haymaker Rd., Suite 1101
Monroeville, PA 15146
P: 412-357-1100

DRAWING NAME: FINAL AS-BUILT DRAWINGS
DISCOVERED UTILITIES DRAWING

PROJECT NAME & LOCATION: HONEYWELL SAS / SITE 153
JERSEY CITY, NEW JERSEY

PREPARED BY	J. HOUGH	CHECKED BY	C. PANICO	REVISION
DRAWN BY	J. HOUGH	APPROVED BY	C. PANICO	1
DATE	2/9/2010	DATE	2/9/2010	SHEET NO.
PROJECT NO.	D1177E	DRAWING NO.	D-1177E-001	4 OF 5

GAS LINES

GAS LINE #1:
- VISIBLE IN EXCAVATION FROM STATION 221+30 TO 223+20
- 4" LINE WITH TRACE WIRE 6" ABOVE CROWN
- LOCATED WITHIN 3' CLEAN FILL ZONE

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION	NOTE/COMMENT
50051	683488.4039	603146.5691	8.29	4" GASLINE #1 INTO SLOPE	GASLINE #1 COMES OUT OF SLOPE ON
50052	683478.349	603151.273	8.23	4" GASLINE #1	NORTHWEST SIDE OF EXCAVATION
50053	683463.6195	603155.0406	8.31	4" GASLINE #1	
50054	683447.812	603159.084	8.38	4" GASLINE #1	
50055	683437.1068	603157.9731	8.41	4" GASLINE #1	
50056	683425.6486	603156.7842	8.68	4" GASLINE #1	
50057	683416.453	603155.83	8.832	4" GASLINE #1	
50058	683405.8789	603154.5975	8.75	4" GASLINE #1	
50059	683393.5769	603153.1636	8.89	4" GASLINE #1	
50060	683382.2877	603151.8477	8.8	4" GASLINE #1	
50061	683373.951	603150.876	8.54	4" GASLINE #1	
50062	683359.8873	603150.1129	8.6	4" GASLINE #1	
50064	683342.2666	603149.6365	8.59	4" GASLINE #1	
50065	683327.6294	603148.5062	8.51	4" GASLINE #1	
50066	683317.6308	603148.5589	8.7	4" GASLINE #1	
50067	683308.1043	603148.302	8.72	4" GASLINE #1	
50068	683301.887	603150.125	11.39	4" GASLINE #1 VALVE	
50069	683296.449	603147.947	8.43	4" GASLINE #1 ENDCAP	CAPPED AT SOUTH END
50072	682867.419	603146.705	10.79	GASLINE TRACE	

GAS LINE #2:
- VISIBLE IN EXCAVATION FROM STATION 216+50 TO 218+50
- 4" LINE WITH TRACE WIRE 6" ABOVE CROWN
- LOCATED WITHIN 3' CLEAN FILL ZONE
- GASLINE #2 RUNS BELOW GASLINE #3 UNTIL STATION 217+25 WHERE IT SPLITS OFF TO THE EAST

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION	NOTE/COMMENT
50000	683940.799	603308.148	9.04	216+50 CAP GAS?	GASMAIN #2 CONTINUES THROUGH NORTH END OF EXCAVATION
50002	683938.7242	603307.0748	6.1	4" GASMAIN #2	
50009	683927.4219	603301.2288	6.09	4" GASMAIN #2	
50012	683917.5805	603296.1384	6.07	4" GASMAIN #2	
50016	683906.5043	603290.4092	6.09	4" GASMAIN #2	
50019	683893.9144	603283.8972	6.01	4" GASMAIN #2	
50020	683876.5582	603274.9198	6.58	4" GASMAIN #2, #3 SPLIT	STOPPED BEING TOP/BOTTOM AND SEPARATED EAST TO WEST
50021	683861.2792	603268.103	6.6	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50022	683843.4816	603260.1915	6.53	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50023	683832.3049	603255.2209	6.52	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50024	683818.6752	603249.1594	6.51	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50025	683805.2821	603243.2031	6.55	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50026	683791.7164	603237.2329	6.55	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50027	683780.1735	603232.1861	6.56	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50034	683763.084	603223.842	5.7	4" GASMAIN #2 (BOTTOM) DEADEND	CAPPED AT SOUTH END

GAS LINE #3:
- VISIBLE IN EXCAVATION FROM STATION 216+50 TO 218+50
- 4" LINE WITH TRACE WIRE 6" ABOVE CROWN
- LOCATED WITHIN 3' CLEAN FILL ZONE
- GASLINE #3 RUNS ABOVE GASLINE #2 UNTIL STATION 217+25 WHERE GASLINE #2 SPLITS OFF TO THE EAST

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION	NOTE/COMMENT
50001	683939.6675	603303.6901	6.09	4" GASMAIN #3	GASMAIN #3 CONTINUES THROUGH NORTH END OF EXCAVATION
50008	683928.0039	603298.3728	6.07	4" GASMAIN #3	
50014	683916.6195	603293.1829	6.18	4" GASMAIN #3	
50017	683906.9606	603288.7796	6.21	4" GASMAIN #3	
50018	683894.0299	603282.8848	6.31	4" GASMAIN #3	
50020	683876.5582	603274.9198	6.58	4" GASMAIN #2, #3 SPLIT	STOPPED BEING TOP/BOTTOM AND SEPARATED EAST TO WEST
50021	683861.2792	603268.103	6.6	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50022	683843.4816	603260.1915	6.53	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50023	683832.3049	603255.2209	6.52	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50024	683818.6752	603249.1594	6.51	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50025	683805.2821	603243.2031	6.55	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50026	683791.7164	603237.2329	6.55	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50027	683780.1735	603232.1861	6.56	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50032	683768.7782	603224.4221	6.51	4" GASMAIN #3	
50033	683768.1088	603226.3949	6.51	4" GASMAIN #3 (TOP) 90 TO WEST	GASMAIN #3 COMES OUT OF WEST END OF SLOPE, 90 TO NORTH

GAS LINE VALVES:
- ALL VALVES LOCATED WERE AT THE START OF GASLINE VIEW AT STATION 218+50

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION	NOTE/COMMENT
50028	683772.502	603228.832	6.91	GAS VALVECAPS	
50029	683771.9	603228.625	6.87	GAS VALVECAPS	
50030	683768.4263	603225.5112	8.08	GAS VALVECAPS	
50031	683768.313	603225.862	7.22	GAS VALVECAPS	

BENCHMARK:

GPS BASE STATION
ELEVATION: 27.521
DATUM: NAVD 29

NOTES:

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R. THOMAS HUGG
NEW JERSEY PROFESSIONAL
LAND SURVEYOR LIC. NO. 36737

WATER LINES

- VISIBLE IN EXCAVATION AT STATION 219+75
- 6" LINE LOCATED OUTSIDE OF EAST EXCAVATION SLOPE
- NOT LOCATED WITHIN ORIGINAL 3' CLEAN FILL ZONE, BUT EXCAVATED AND CLEAN–FILLED DUE TO RUPTURED LINE

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION	NOTE/COMMENT
50044	683646.3433	603202.5977	7.69	6" WATER LINE	
50047	683635.7567	603199.5078	7.49	6" WATER LINE	
50050	683631.71	603198.325	7.21	6" WATER LINE - REPAIR LOCATION	WATER LINE RUPTURED DURING EXCAVATION
50045	683643.369	603201.731	9.07	WATER LINE VENT CAP	
50046	683642.576	603201.807	10.09	WATERMAIN VALVE CAP	

SANITARY LINES

12" RCP STORM LINES:
- VISIBLE IN EXCAVATION NEAR STATION 216+75

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION	NOTE/COMMENT
50005	683926.702	603311.632	6.92	12" RCP SANITARY #1	
50013	683916.2332	603296.7493	6.89	12" RCP SANITARY #1	
50006	683927.771	603310.645	6.91	12" RCP SANITARY #2	
50011	683918.125	603297.0997	7.07	12" RCP SANITARY #2	

6" PVC SANITARY LINES:
- SANLINE #1 VISIBLE PERPENDICULAR WATER LINE AT 219+75
- SANLINE #2 IS VISIBLE PERPENDICULAR TO EXCAVATION AT 219+00
- SANLINES #3 AND #4 ARE VISIBLE NEAR STATION 216+75
- ALL LINES LOCATED WITHIN 3' CLEAN FILL ZONE

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION	NOTE/COMMENT
50048	683634.345	603198.23	7.67	6" SANITARY LINE #1 90 DOWN FROM BUILDING	
50049	683633.797	603202.1406	7.68	6" SANITARY LINE #1 FROM BUILDING	
50039	683722.0462	603205.564	7.21	6" SANITARY LINE #2	
50040	683703.1678	603223.7655	7.48	6" SANITARY LINE #2	
50010	683915.0549	603314.0375	7.54	6" SANITARY LINE #3	
50015	683909.7637	603293.674	6.79	6" SANITARY LINE #3	
50003	683934.5288	603299.4222	5.54	6" SANITARY LINE #4	
50007	683923.722	603314.618	7.15	6" SANITARY LINE #4	

ELECTRIC LINES

- VISIBLE IN EXCAVATION PERPENDICULAR TO EXCAVATION AT STATION 218+75
- LOCATED WITHIN 3' CLEAN FILL ZONE,

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION	NOTE/COMMENT
50035	683727.458	603232.0212	7.66	ELECTRIC LINE 1	
50037	683735.4818	603210.9427	7.26	ELECTRIC LINE 1	
50036	683728.4695	603232.3838	7.11	ELECTRIC LINE 2	
50038	683736.2179	603211.2654	7.1	ELECTRIC LINE 2	

MISC UTILITIES AND ITEMS

- VISIBLE IN EXCAVATION PERPENDICULAR TO EXCAVATION AT STATION 218+75
- ALL LOCATED WITHIN OR ABOVE 3' CLEAN FILL ZONE,

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION	NOTE/COMMENT
50063	683366.047	603148.971	11.74	153-MW-A15	MW HIT IN EXCAVATION PROGRESS
50041	683678.101	603212.934	9.91	MW	
50042	683671.178	603210.828	9.8	MW	
50075	682650.906	603169.621	8.27	12" PVC VERTICAL UNKNOWN	
50076	682503.5021	603173.4835	8.34	CONCRETE SLAB	STATION 231+25
50077	682496.608	603173.338	8.32	CONCRETE SLAB	
50078	682490.813	603172.948	8.23	CONCRETE SLAB	
50079	682491.666	603168.722	8.41	CONCRETE SLAB	
50080	682496.379	603168.843	8.55	CONCRETE SLAB	
50081	682503.217	603168.543	8.21	CONCRETE SLAB	
50082	682485.554	603172.823	8.2	CONCRETE SLAB	
50083	682486.03	603168.28	8.22	CONCRETE SLAB	
50073	682725.2195	603150.8424	10.94	ELECTRIC PULLBOX	ELEC LINE NOT IN EXCAVATED AREA
50043	683662.772	603209.23	9.63	LIGHTPOLE BASE	
50074	682670.8563	603154.8473	10.28	LIGHTPOLE BASE	
50084	682442.096	603164.631	11.68	MH #1	STATION 231+75
50071	682971.545	603140.326	12.17	MH #2	STATION 225+00
50070	683124.472	603135.841	12.06	MH #3	STATION 226+50
50004	683931.249	603314.674	9.83	MH #4	STATION 216+50
50085	683928,1	603323,3	10,3	MANHOLE	CAP LIMIT NORTH OF GARFIELD BUILDING
50086	683529,3	603177,5	10,214	MANHOLE	CAP LIMIT SOUTHWEST OF GARFIELD BUILDING
50087	682505,7	603159,2	10,793	MANHOLE	22" S.H.D.
50088	682472,1	603170,6	15,075	MANHOLE	48" B.M.U.A. MAIN

REV	DATE	BY	CH'K'D	APR'VD	DESCRIPTION
1.	3/30/10	D.J.M.	RTH		ADDITIONAL UTILITY LOCATIONS INCLUDED

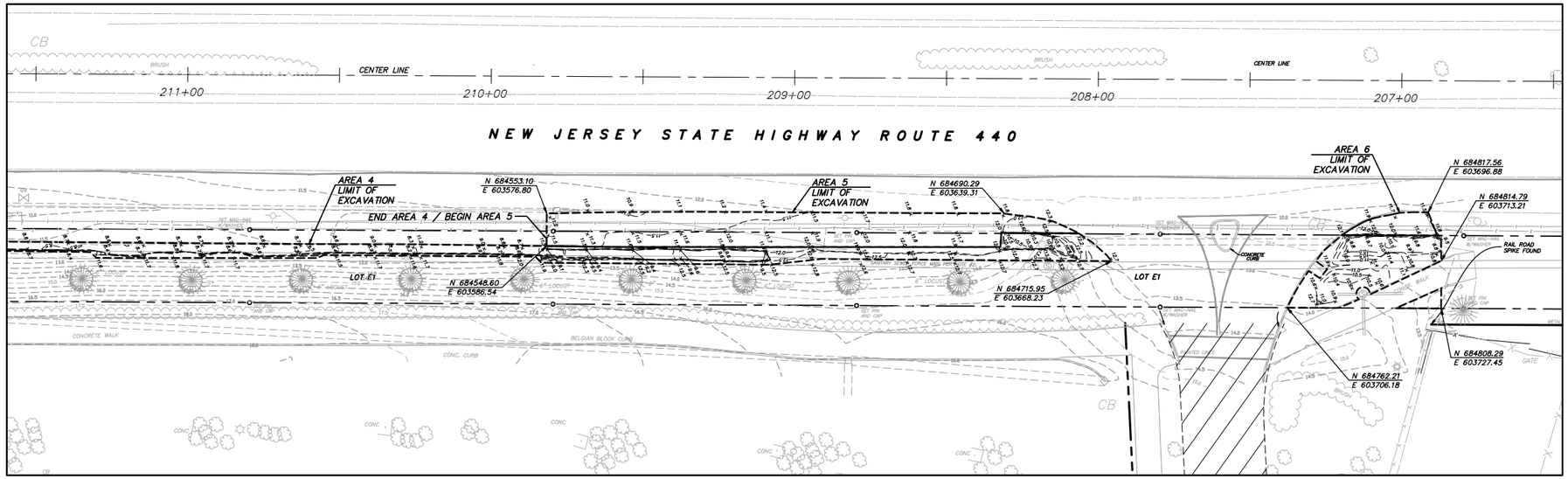
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339 Haymaker Rd., Suite 1101
Monroeville, PA 15146
P: 412-357-1100

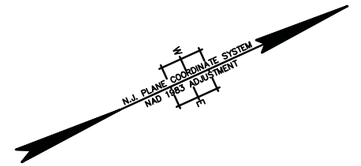
DRAWING NAME	FINAL AS-BUILT DRAWINGS DISCOVERED UTILITIES LIST
PROJECT NAME & LOCATION	HONEYWELL SAS / SITE 153 JERSEY CITY, NEW JERSEY

PREPARED BY	J. HOUGH	CHECKED BY	C. PANICO
DRAWN BY	J. HOUGH	APPROVED BY	C. PANICO
DATE	2/9/2010	DATE	2/9/2010
PROJECT NO.	D1177E	DRAWING NO.	D-1177E-001

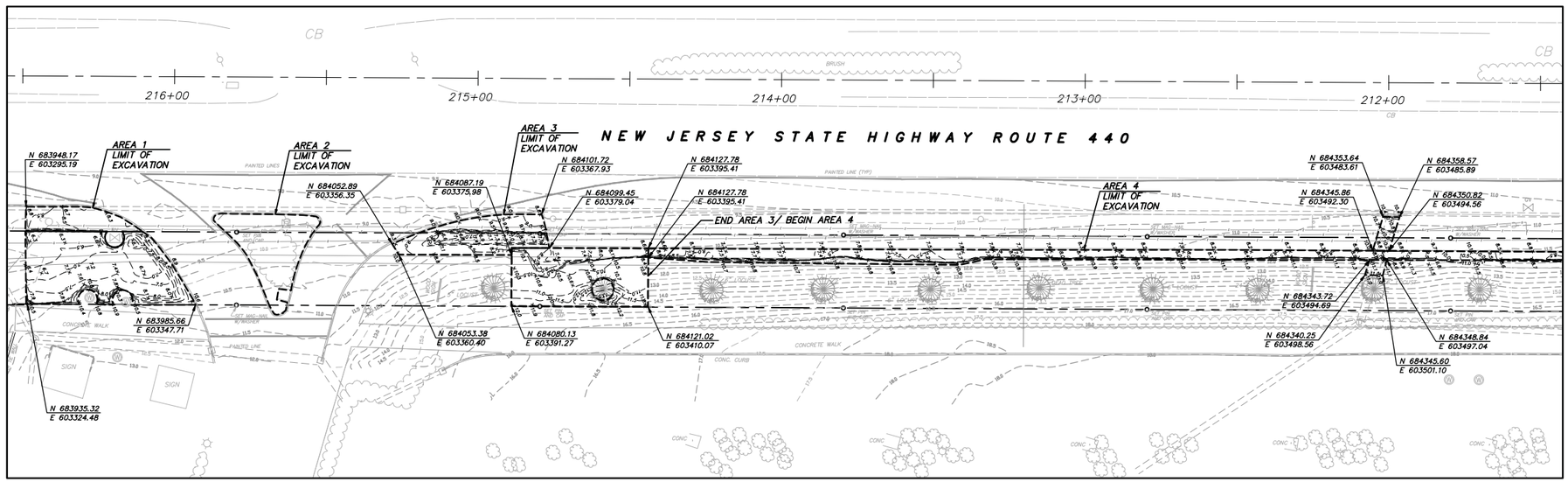
REVISION: 1
SHEET NO.: 5 OF 5

STATION 206+50 TO 211+50





STATION 211+50 TO 215+50



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4. SITE BENCHMARK USED: GPS BASE STATION – ELEVATION = 27.52 THE HORIZONTAL DATUM IS NAD83, THE VERTICAL DATUM IS NGVD29.

BENCHMARK:

GPS BASE STATION
ELEVATION: 27.521
DATUM: NAVD 29

LEGEND

12 — AS-BUILT POST EXCAVATION CONTOURS
— — — LIMITS OF EXCAVATION

20 0 20 40
SCALE IN FEET
(1"=20')

REV.	DATE	DRAWN BY	DESCRIPTION
1.	1/3/2012	BSB	REV. PER ENG. REVIEW COMMENTS DATED 11/29/11

R. THOMAS HUGG
NEW JERSEY PROFESSIONAL
LAND SURVEYOR LIC. NO. 36737

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects
State of N.J. Certificate of Authorization: 24GA27986500

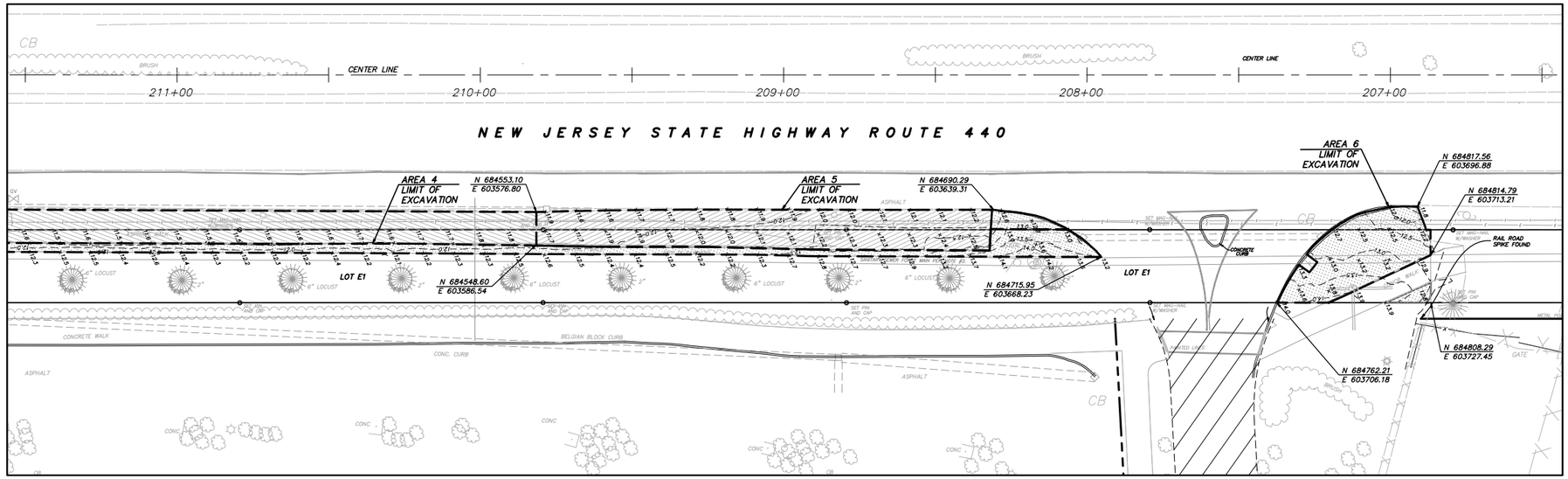
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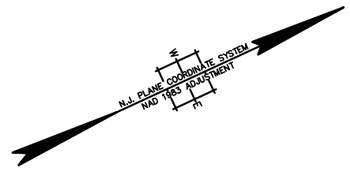
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FINAL AS-BUILT CONTOUR DRAWING
POST-EXCAVATION SURFACE
HONEYWELL AREA 5 SITE 153
SOUTH UPPER SEGMENT
JERSEY CITY
HUDSON COUNTY NEW JERSEY

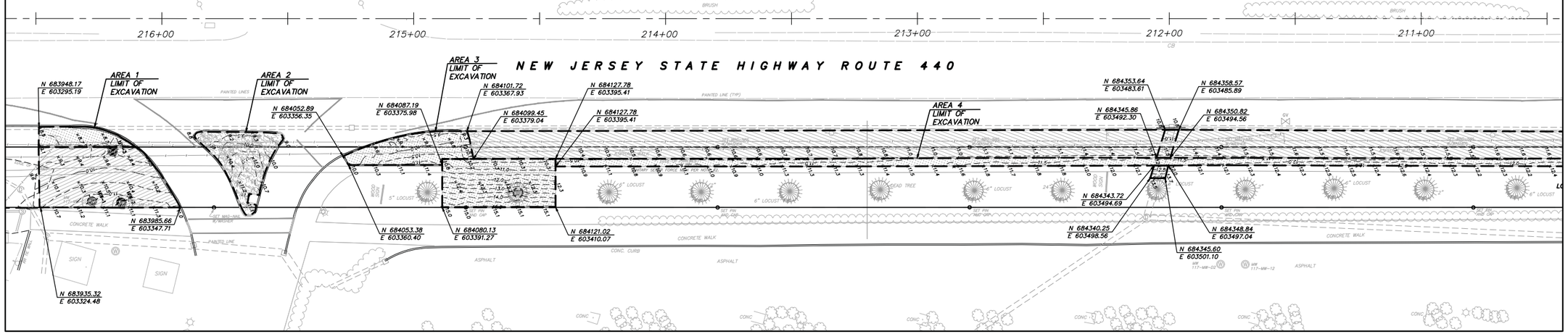
JOB NUMBER: 11000810A	DATE: OCT. 28. 2011
SCALE: 1"=20'	LATEST REVISION: JAN. 3, 2012
INDEX NUMBER: RBSU015980	DESIGN BY: MRM
SHEET NUMBER: 1 of 1	

STATION 206+50 TO 211+50





STATION 211+50 TO 215+50



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BENCHMARK:

GPS BASE STATION
ELEVATION: 27.521
DATUM: NAVD 29

LEGEND

- 12 — AS-BUILT FINISH GRADE CONTOURS
- LIMITS OF EXCAVATION
- AS-BUILT SOIL AND GRASS AREAS
- AS-BUILT 6" ASPHALT AREAS
- AS-BUILT 2" ASPHALT AREAS

20 0 20 40
SCALE IN FEET
(1"=20')

REV.	DATE	DRAWN BY	DESCRIPTION
2.	1/3/2012	BSB	REV. PER ENG. REVIEW COMMENTS DATED 11/29/11
1.	12/1/11	RTH	REVISIONS TO SHOW AS-BUILT AREAS AND TYPES

R. THOMAS HUGG
NEW JERSEY PROFESSIONAL
LAND SURVEYOR LIC. NO. 36737

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ■ Surveyors ■ Landscape Architects
State of N.J. Certificate of Authorization: 24GA27986500

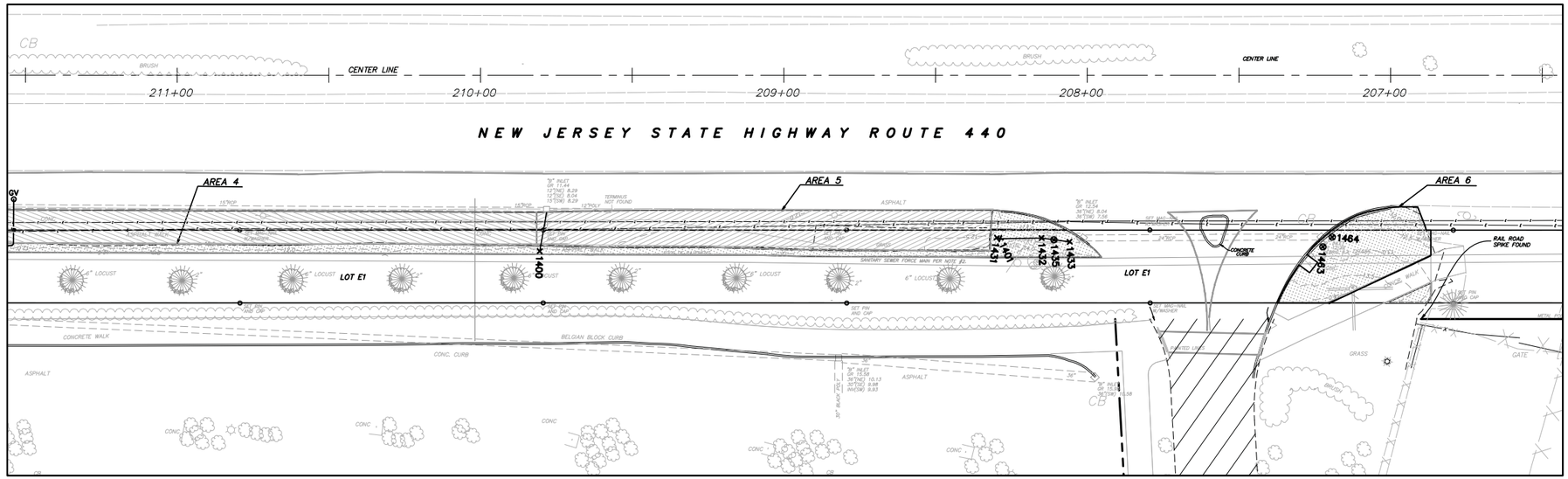
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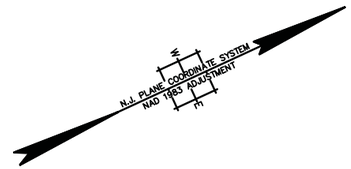
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FINAL AS-BUILT CONTOUR DRAWING
AND SITE RESTORATION
HONEYWELL AREA 5 SITE 153
SOUTH UPPER SEGMENT
JERSEY CITY
HUDSON COUNTY NEW JERSEY

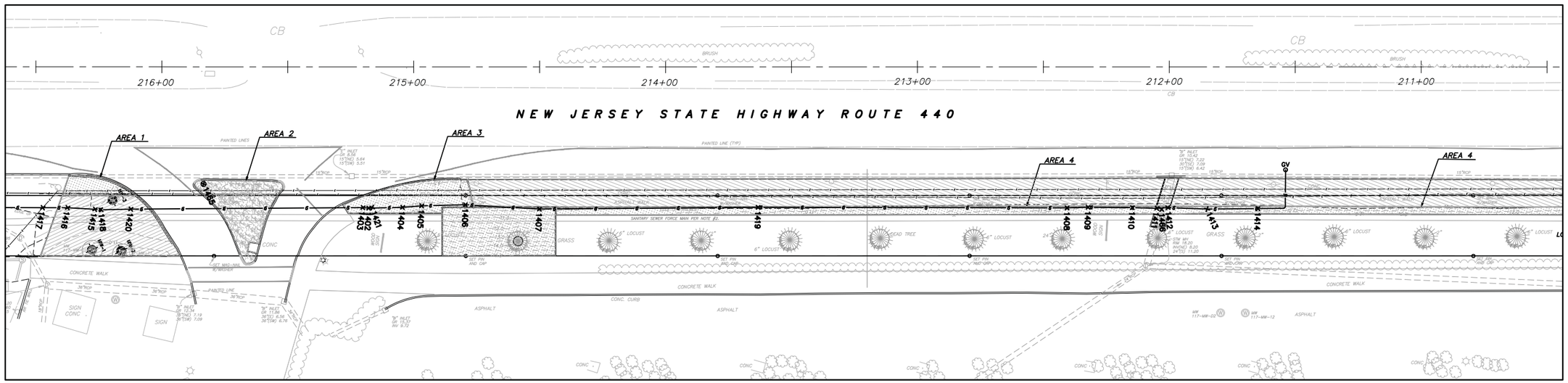
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SCALE: 1"=20'	LATEST REVISION: JAN. 3, 2012
INDEX NUMBER: RBSU016153	DESIGN BY: MRM
SHEET NUMBER: 1 of 1	

STATION 206+50 TO 211+50





STATION 211+50 TO 215+50



GAS LINE CHART

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1402	684061.58	603361.87	8.53	6" HDPE Gas Tracer 6" Offset above
1403	684059.60	603360.73	8.39	6" HDPE Gas Tracer 6" Offset above
1404	684073.91	603367.24	8.59	6" HDPE Gas Tracer 6" Offset above
1405	684081.08	603369.88	8.17	6" HDPE Gas Tracer 6" Offset above
1406	684096.98	603376.75	8.46	6" HDPE Gas Tracer 6" Offset above
1407	684122.97	603390.63	8.44	6" HDPE Gas Tracer 6" Offset above
1408	684313.37	603478.01	8.50	6" HDPE Gas Tracer 6" Offset above
1409	684321.04	603481.28	8.99	6" HDPE Gas Tracer 6" Offset above
1410	684336.95	603488.79	8.59	6" HDPE Gas Tracer 6" Offset above
1411	684345.69	603493.11	8.54	6" HDPE Gas Tracer 6" Offset above
1412	684349.76	603494.68	8.69	6" HDPE Gas Tracer 6" Offset above
1413	684363.62	603501.72	9.66	6" HDPE Gas Tracer 6" Offset above
1414	684382.04	603510.01	9.58	6" HDPE Gas Tracer 6" Offset above
1415	683962.73	603316.76	7.31	6" HDPE Gas Tracer 6" Offset above
1416	683953.12	603311.62	8.36	6" HDPE Gas Tracer 6" Offset above
1417	683944.16	603307.49	8.37	6" HDPE Gas Tracer 6" Offset above
1418	683964.77	603317.92	7.42	6" HDPE Gas Tracer 6" Offset above
1419	684202.07	603426.38	7.52	6" HDPE Gas Tracer 6" Offset above
1420	683975.67	603322.65	7.41	6" HDPE Gas Tracer 6" Offset above
1421	684062.96	603362.29	7.24	6" HDPE GAS

STORM CHART

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1400	684548.69	603588.86	9.64	18" RCP Top of Pipe
1401	684688.26	603648.72	10.38	36" Currogated HDPE STORM Top
1431	684687.30	603648.00	10.47	A5 36" Currogated HDPE STORM Top
1432	684700.69	603654.24	10.45	A5 36" Currogated HDPE STORM Top
1433	684708.56	603659.24	11.94	A5 36" Currogated HDPE STORM Top
1435	684704.13	603656.48	12.71	A5 STORM MANHOLE
1463	684783.68	603695.71	11.68	A6 DRAIN Box Manhole
1464	684787.80	603694.11	11.67	A6 DRAIN Box Manhole
1465	684006.07	603325.68	9.12	STORM MANHOLE
1466	684347.19	603494.29	10.25	STORM SEWER HDPE

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ELEVATION: 27.521
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LEGEND

- 12 — AS-BUILT FINISH GRADE CONTOURS
- LIMITS OF EXCAVATION
- AS-BUILT SOIL AND GRASS AREAS
- AS-BUILT 6" ASPHALT AREAS
- AS-BUILT 2" ASPHALT AREAS

20 0 20 40
SCALE IN FEET
(1"=20')

REV.	DATE	DRAWN BY	DESCRIPTION

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FINAL AS-BUILT CONTOUR DRAWING
DISCOVERED UTILITIES DRAWING
HONEYWELL AREA 5 SITE 153
SOUTH UPPER SEGMENT
JERSEY CITY
HUDSON COUNTY NEW JERSEY

JOB NUMBER: 11000810A	DATE: DEC. 1. 2011
SCALE: 1"=20'	LATEST REVISION:
INDEX NUMBER: RBSU016300	DESIGN BY: MRM
SHEET NUMBER: 1 of 1	

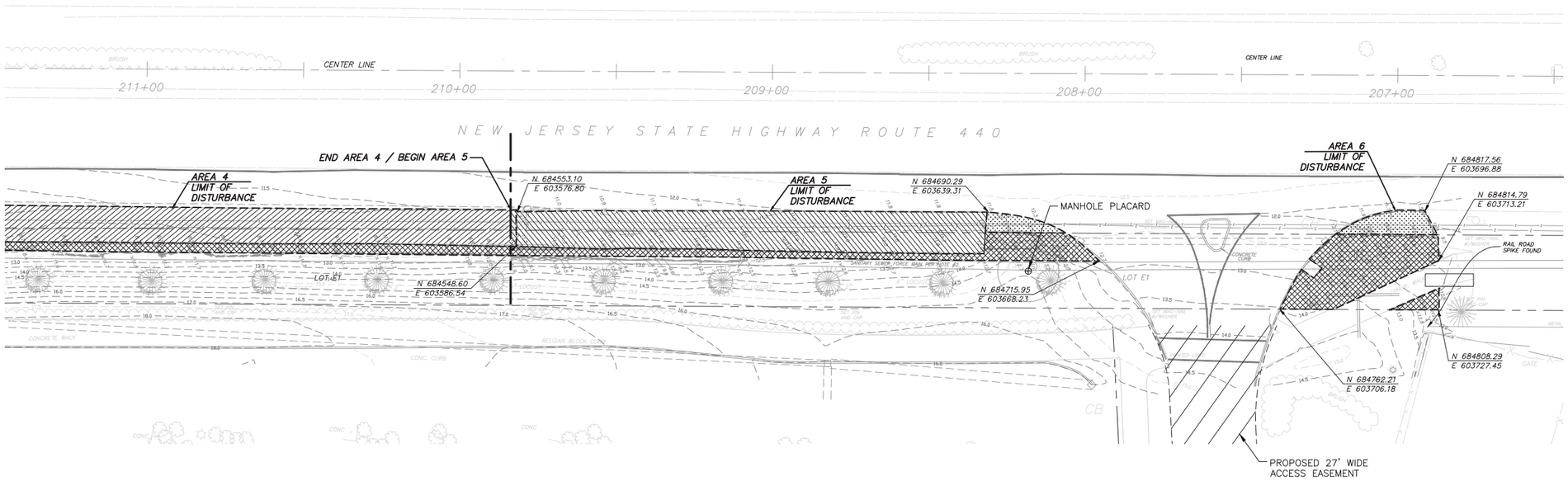
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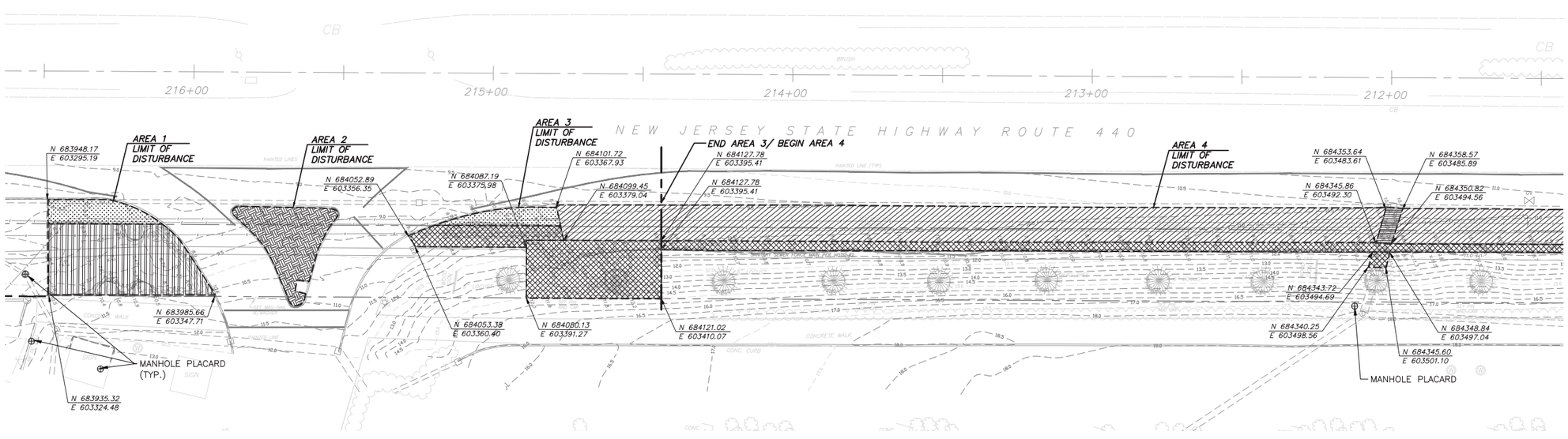
LEGEND:

- 6" VEGETATIVE RESTORATION – NJDOT R.O.W.
- 3' EXCAVATION – VEGETATIVE CAP
- 3' EXCAVATION – ASPHALT CAP
- 1' TOPSOIL RESTORATION
- 2" MILLING/REPLACEMENT – ASPHALT CAP
- 1' ASPHALT RESTORATION
- 6" ASPHALT RESTORATION
- ⊕ MANHOLE WARNING PLACARD LOCATION

STATION 206+50 TO 211+50



STATION 211+50 TO 215+50



0 10 20 40
SCALE IN FEET

REV.	DATE	STATUS	PRPD BY	CHKD BY

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DRAWING: 3480120310-6100-IRM-RTC-0000

PREPARED/DATE: DL 10/3/12

CHECKED/DATE: EGC 10/9/12

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ENVIRONMENT & INFRASTRUCTURE
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HAMILTON, NEW JERSEY 08619

FIGURE 3
EXCAVATION AND ASPHALT RESTORATION OF INTERIM REMEDIAL ACTIONS
SA-5 SITE 153 SOUTH UPPER SEGMENT
JERSEY CITY, NEW JERSEY

P:\CADD\HONEYWELL\JERSEY CITY\SA 5\SITE 153\3480120310\6100\3480120310-6100-IRM-RTC-0000.dwg Tue, 09 Oct 2012 - 3:27pm david.leech Layout: Layout

APPENDIX C

WORKER TRAINING MANUAL
(Separate Document)

APPENDIX D

DRAFT SPECIFICATIONS FOR CHROMIUM MATERIALS EXCAVATION AND MANAGEMENT

DRAFT SPECIFICATIONS

FOR

CHROMIUM MATERIALS EXCAVATION AND MANAGEMENT

Prepared by

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

DECEMBER 2014

DRAFT

Table of Contents

SECTION 01000 Chromium-Impacted Materials 2

SECTION 01001 Excavation of Chromium-Impacted Materials 4

SECTION 01002 Handling and Management of Chromium-Impacted Materials 6

SECTION 01003 Waste Transportation and Disposal of Chromium-Impacted Materials 10

ATTACHMENTS

List of Honeywell Approved Waste Facilities (to be provided to contractor if needed)

DRAFT

SECTION 01000 CHROMIUM-IMPACTED MATERIALS

PART 1 – GENERAL

1.01 DESCRIPTION

A. These specifications were prepared by Amec on behalf of Honeywell for use by the Bayonne Municipal Utilities Authority (BMUA) and its Contractors to address excavation and management of chromium-impacted materials that may be encountered during sewer maintenance; repair and/or replacement work at designated sites in Bayonne and Jersey City. Chromium-impacted material refers to soil, fill or other materials such as concrete debris containing hexavalent chromium above the NJDEP soil criteria, currently 20 milligrams per kilogram (mg/kg or parts per million [ppm]). Chromium-impacted groundwater refers to groundwater containing chromium above the NJDEP groundwater quality standards, currently 70 micrograms per liter (ug/L or parts per billion [ppb] based on total chromium).

B. This specification consists of the following sections.
Section 01001 Excavation of Chromium-Impacted Materials
Section 01002 Handling and Management of Chromium-Impacted Materials
Section 01003 Waste Transportation and Disposal of Chromium-Impacted Materials

C. These specifications apply to excavation and management of chromium-impacted materials that may be generated during sewer work. For BMUA specifications applicable to sewer construction work, refer to the BMUA Rules and Regulations and Standard Specifications/Construction Details (August 2003).

D. During work execution, the BMUA will be the contracting authority and will direct all work being conducted. However, coordination and consultation between the BMUA and Honeywell may be needed on how best to manage chromium-impacted materials on a case by case basis. Honeywell (or its designated Contractor) may observe or provide oversight of work involving excavation and handling of chromium-impacted materials. In such cases, Honeywell will provide a designated representative ("Honeywell Representative") to provide guidance on the handling of these materials.

E. These specifications are included as part of the Standard Operating Procedure (SOP) for Coordinating Work within Chromium Soil Areas. The SOP addresses coordination of work between Honeywell and the BMUA during sewer repair or replacement performed either as part of planned maintenance work, or required as a result of an emergency situation in areas of chromium-impacted soils. The SOP specifies that BMUA's Contractor will take the lead in performing work associated with excavation of materials generated during sewer work. Honeywell's and/or its designated representative will assist the BMUA in determining whether or not the work location is in an area of chromium soils and provide technical assistance, field oversight and support as needed during soil excavation and site restoration. Honeywell (or its designated contractor) will arrange for disposal of chromium contaminated materials if required in connection with sewer work. In some cases, the BMUA's Contractor may take the lead in providing offsite transportation and disposal of chromium-contaminated materials, to be determined on a case-by-case basis in consultation with Honeywell.

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1.02 REFERENCES

A. The Contractor shall perform all work in accordance with all applicable, Federal, State and local regulations and guidance documents.

B. Worker Training Manual: Prepared by Honeywell for use by the BMUA and addresses health and safety requirements for BMUA personnel and contractors who may be implementing sewer pipeline maintenance, repair and/or replacement work or other ground intrusive activities (e.g., digging, drilling, excavation) in areas of chromium-impacted fill.

C. BMUA Rules and Regulations and Standard Specifications/Construction Details (BMUA, August 2003).

D. NJDEP Guidance for the Characterization of Concrete and Clean Material Certification for Recycling.

1.03 SUBMITTALS

A. The Contractor shall submit to the BMUA's designated representative for approval (unless otherwise specified) the following:

1. Materials Management Plan: The plan shall include the identified chromium-impacted materials requiring management, the type of containers to be utilized, procedures for management of chromium-impacted materials, equipment to be utilized, and the proposed means/methods of coordinating the work.
2. Health and Safety Plan (HASP): The HASP shall comply with all provisions of OSHA which are relevant to the excavation, handling and management of chromium-impacted materials. At a minimum, the plan shall cover OSHA personnel training requirements for work being performed, provisions for prevention of contaminant migration during work, emergency and contingency planning, and work zone monitoring, and perimeter air-monitoring (if required). It shall be prepared in conformance with all applicable Health and Safety laws and regulations including but not limited to OSHA 1910.120.
3. Hazardous Waste Contingency Plan: The plan shall address preparedness and prevention, emergency procedures and evacuation plan, if required in accordance with 40 CFR 262.34 and 264.52. This plan may overlap with and be included as part of the HASP.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

- END OF SECTION -

DRAFT

SECTION 01001: EXCAVATION OF CHROMIUM-IMPACTED MATERIALS

PART 1 GENERAL

1.1 SCOPE OF WORK

A. The work under this section shall consist of furnishing all labor, equipment and materials for performing all operations for excavation of chromium-impacted materials.

1.2 QUALITY ASSURANCE

A. The Contractor shall be responsible for contacting Honeywell for coordination of offsite transportation and disposal of chromium-impacted materials, if required in connection with sewer work.

B. Confirmatory/post-excavation sampling or testing may be required for excavation bottom and sidewalls, to be determined on a case by case basis in consultation with BMUA and Honeywell. Contractor shall cooperate with BMUA and/or Honeywell's designated representative and provide access for sampling if needed.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 EXCAVATION

The Contractor shall prepare and submit as part of the Materials Management Plan, a section describing excavation activities for chromium-impacted areas to the BMUA for review and approval. The excavation section of the Plan shall include a description of the work required in this specification section, work sequencing and scheduling including: excavation methods; plans for decontamination; dust control measures; any proposed temporary staging areas; handling and management of excavated materials; and any permit requirements. The excavation section of the Plan shall also include copies of required notifications and permits obtained by the Contractor and a list of all subcontractors proposed with copies of their current, valid permits or licenses to perform the work. All work shall be conducted in accordance with all OSHA requirements. Work shall not begin until approval is received from BMUA's designated representative.

3.2 REMOVAL OF CONTAMINATED SOIL

A. The Contractor shall excavate contaminated soil/material as needed to complete sewer work as required by the BMUA.

B. The Contractor shall provide means to suppress dust as needed during excavation and while the excavation is open and/or stockpiles are in place.

C. The Contractor shall manage contaminated soil/material in accordance with Specification – Material Handling and Management.

D. The Contractor shall coordinate access to the excavation(s) with BMUA's and/or Honeywell's designated representative as deemed necessary for inspection and collection of soil samples.

E. The Contractor shall maintain a Record Drawing documenting the daily cumulative horizontal and vertical extent of the excavation in each area of concern including

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estimated quantities. The Record Drawing shall be updated daily, provided to the BMUA's designated representative and shall be posted in the Contractor's trailer.

F. Any subsurface structures, or portions thereof, or debris located within the limits of the chromium-impacted area being excavated shall be removed and decontaminated where practicable, and segregated for characterization prior to off-site disposal. Material shall be characterized in accordance with current NJDEP guidance and disposal facility requirements. Debris may be reduced in size to meet specific disposal facility requirements. Size reduction will be accomplished in coordination with and the concurrence of the BMUA's designated representative and be performed in compliance with all applicable state and local regulation.

G. Any utilities and associated structures encountered within the excavation shall be addressed on a case by case basis by the Contractor in consultation with BMUA's designated representative and other utility owners (if encountered).

H. Excavation in close proximity to active utilities or aboveground structures shall be done in a manner protective of the utility or structure. The Contractor shall protect all existing structures to remain and active utilities.

I. All earthwork equipment and tools used for excavation of contaminated soil/material shall be decontaminated in accordance with the HASP, and these specifications, prior to being used elsewhere on site or before leaving the site.

3.3 EXCAVATION AREA

A. The chromium-impacted areas to be excavated will be defined in the field by BMUA's and/or Honeywell's representative.

B. Excavation activities include the excavation and removal of soil/material from designated chromium-impacted area(s).

C. The activities shall be performed in accordance with OSHA requirements for excavation. Work shall be completed by OSHA trained individuals. Refer to the Worker Training Plan for guidance on applicable training requirements.

D. The Contractor shall not backfill the excavation until the final limits of excavation are reviewed and approved by the BMUA's designated representative. Backfill can begin immediately upon approval of the BMUA's designated representative.

E. The excavation shall be kept dry by the implementation of construction dewatering operations, if groundwater or storm water is encountered during construction. Evacuated water shall be characterized and disposed in accordance with all applicable Federal, State and local requirements.

F. Refer to Section 01002 (Handling and Management of Chromium-Impacted Materials) and Section 01003 (Waste Transportation/Disposal of Chromium-Impacted Materials) for requirements for management, loading and transportation/disposal of chromium-impacted materials.

G. The Contractor shall provide all labor, equipment and materials for road closures, as needed, based on the operation.

- END OF SECTION -

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SECTION 01002: HANDLING AND MANAGEMENT OF CHROMIUM-IMPACTED MATERIAL

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall furnish all labor, equipment, and materials necessary to provide for the proper on-site handling and management of chromium-impacted materials including but not limited to: excavated soils, fill materials (including materials identified as chromium-impacted solid waste), excavated chromium-impacted concrete/masonry, metal, and all other debris; excavated non-chromium impacted soils/materials; asphalt pavement; miscellaneous construction debris (vegetation, trees, wood, etc.); liquid waste (decontamination water, construction dewatering, etc.); and remediation waste (disposable PPE, plastic sheeting, sampling equipment, etc.).

B. The Contractor is responsible to perform all work in compliance with applicable Federal, State, and local regulations and requirements.

C. The Contractor is required to provide a Site Specific Health and Safety Plan, Materials Management Plan, and Hazardous Waste Contingency Plan.

D. The Contractor shall be responsible for coordinating the work/schedule with Honeywell for transportation/disposal of chromium-contaminated materials (see list of approved facilities in Attachment A).

E. Non-chromium impacted soils removed from excavation areas shall be stockpiled temporarily in a designated stockpile area, as approved by BMUA's designated representative.

F. For chromium-impacted soils, the preferred soil management method is direct loading and offsite transportation of soils removed from excavation area. If direct loading is not possible, then soils may be stockpiled temporarily in a designated Waste Staging and Storage Area as approved by BMUA's and Honeywell's Representative.

G. Asphalt and/or concrete materials removed from excavation areas shall be inspected for potential chromium impacts, characterized in accordance with current NJDEP guidance and properly disposed off-site. NJDEP Guidance for Characterization of Concrete and Clean Material Certification for Recycling may be applicable.

H. Oversize material removed from excavation areas, shall be properly disposed off-site in accordance with local, State and Federal disposal requirements.

I. The Contractor shall provide a system to weigh loaded trucks before they leave the site to confirm the maximum weight restriction is not exceeded. The system can include trucks equipped with load cells, or portable truck scale or similar device approved by BMUA and Honeywell's Representative.

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1.02 WASTE CONTAINERS

A. The Contractor shall provide as applicable:
   1. Plastic bags for disposable personnel protection equipment. Plastic bags shall have a minimum thickness of six (6) mils.
   2. Containers (e.g., roll-off containers) for non-hazardous municipal trash and debris.
   3. DOT-approved, steel drums (55-gallon capacity) for storage of residual impacted material and/or water or roll-off containers, if needed.
   4. Portable temporary storage tanks (FRAC tanks, etc.) for the storage, treatment and/or disposal of any collected liquids, such as pumped groundwater from excavation dewatering, decontamination fluids. The Contractor is responsible for transportation/disposal of collected liquids at an approved facility. If water is discharged to local sanitary sewer system, Contractor is responsible for obtaining any approvals/permits, meeting local sewer utility discharge criteria and satisfying all other conditions and requirements of the local sewer utility, including sampling/analysis/reporting and compliance with NJDEP Treatment Works Approval for the construction and operation of on-site treatment system.

1.03 ON-SITE MANAGEMENT AND STORAGE OF MATERIALS

A. The Contractor shall be responsible for proper on-site management of wastes generated in compliance with all Federal, State, and Local regulations and requirements.

B. The Contractor shall load non-hazardous municipal trash and debris into appropriate containers for subsequent removal from the site in a timely manner.

C. The Contractor shall load cleared vegetation and other non-impacted debris into appropriate containers for subsequent removal from the site in a timely manner.
   1. Temporary on-site stockpiles of cleared material may be allowed, as approved by BMUA's designated representative, to facilitate the progress of the work.

D. The Contractor shall be responsible for loading all waste containers, trucks, etc. with non-hazardous and hazardous solid waste materials removed from the work areas.

E. The Contractor shall be responsible for movement/direction of the containers, trucks, etc. into positions required for proper loading and management of material.

F. The Contractor shall be responsible for the on-site management of roll-off containers, storage of trash and debris from site preparation, and final site cleanup activities.

G. The Contractor shall be responsible for coordinating the schedule for delivery and pick-up of supplied waste containers. The Contractor shall also be responsible for movement and storage of containers within the site to allow the progress of the work.

H. The Contractor shall provide a base for any temporary stockpiles using at a minimum 6 mil polyethylene sheeting to prevent direct contact and cross-contamination of the underlying soil/asphalt. The plastic sheeting shall be properly overlapped to protect against direct soil/asphalt contact.

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I. The Contractor shall cover any temporary stockpiles with at a minimum 6 mil polyethylene sheeting to prevent erosion of the stockpiles or uncontrolled runoff while promoting runoff of precipitation. The plastic sheeting shall be weighted down appropriately for expected weather conditions.

1. Temporary stockpiles shall be located in designated Stockpile Area, as approved by the BMUA's designated representative. The base of all stockpiles shall be contained by a siltation fence reinforced with staked straw bales. In addition to the above, asphalt berms and/or sand bags may be used to divert surface water runoff from the stockpile areas. In all cases contractor shall maintain conformance with standard methods for NJ Soil and Erosion Control and/or a Soil and Erosion Control Plan Certification.

1.04 ANALYTICAL TESTING AND CLASSIFICATION OF WASTE MATERIALS

A. No testing requirements are expected for the following non-impacted wastes:

1. Cleared vegetation; and
2. General trash and rubbish from outside the exclusion zone.

B. Contractor shall be responsible for waste classification testing of excavated soils and other debris destined for offsite disposal as required in accordance with applicable regulations and guidance; obtaining acceptance of waste material as needed from disposal facilities; and making arrangements for waste transportation and disposal including the use of Honeywell approved waste facilities for chromium-impacted materials, if required in connection with sewer work. Honeywell (or its designated contractor) may take the lead in making arrangements and providing for offsite transportation and disposal of chromium-contaminated materials, to be determined on a case-by-case basis.

C. For non-chromium impacted soils, Contractor shall provide for waste classification sampling and transportation/disposal/reuse as appropriate in consultation with BMUA's designated representative. Excavated materials identified/characterized as non-chromium impacted soil shall be stockpiled temporarily in the designated Stockpile Area, as approved by BMUA's designated representative.

D. For chromium-impacted soils, Contractor shall provide for direct-loading (where possible) into trucks/containers for transportation to an approved waste facility. If direct loading is not possible, then soils shall be stockpiled temporarily in a designated stockpile area (separate from non-chromium impacted soils). Direct loading and transportation of chromium-impacted soils is preferred whenever possible. When used, stockpiles of chromium-impacted soil shall be constructed and protected in a manner that will ensure the integrity of the stockpile is maintained and the potential for migration of chromium-impacted soil or water in contact with chromium-impacted soil is mitigated.

1.05 LOADING OF WASTES

A. The Contractor shall furnish all labor, equipment, and materials necessary to provide for the proper loading of all materials generated during the execution of the work.

B. The Contractor shall be responsible for coordinating the work/schedule with Honeywell (or its designated contractor) for the loading and transportation/disposal of chromium contaminated materials.

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C. The Contractor shall be responsible for any demurrage charges associated with delays in the timely loading the waste materials.

D. Materials that contain excess water shall be mixed with a sufficient quantity of absorbent to prevent free water from developing in containers during transport to the disposal facility.

E. Absorbents shall be approved by Honeywell's designated representative and the disposal facility as needed to allow effective transport of materials to designated disposal facility.

1.06 TRANSPORTATION OF WASTES

A. The Contractor shall arrange for the proper transportation and disposal of non-impacted waste (e.g., cleared vegetation, general trash and rubbish) in accordance with applicable local, state and federal regulations.

B. The Contractor shall arrange for the proper transportation of non-hazardous waste materials and chromium-impacted hazardous waste materials (if applicable) to appropriate licensed/permitted disposal facilities, in accordance with applicable local, state and federal regulations.

C. The Contractor shall be responsible for coordinating with Honeywell (or its designated contractor) and scheduling transporters for offsite transportation and disposal of chromium-impacted materials generated during execution of the work at Honeywell approved waste facilities. Honeywell (or its designated contractor) may take the lead in coordinating and providing offsite transportation and disposal of chromium-contaminated materials, to be determined on a case-by-case basis.

D. The Contractor shall require that the transporters arriving at the site for loading do not cause undue congestion to local streets, and shall stage trucks either within the perimeter of the site or at an off-site staging area.

DISPOSAL OF WASTES

A. The Contractor shall be responsible for coordinating with Honeywell approved waste facilities, scheduling transporters and arranging for off-site transportation and disposal of chromium-impacted materials, if applicable for the project.

B. The Contractor shall provide for offsite transportation and disposal of non-chromium impacted waste materials in accordance with in accordance with applicable local, state and federal regulations.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

Not Applicable.

--END OF SECTION--

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SECTION 01003: WASTE TRANSPORTATION AND DISPOSAL OF CHROMIUM-IMPACTED MATERIALS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section describes the Contractor's minimum responsibilities for and requirements for Waste Transportation and Disposal of chromium-impacted materials, including coordination with Honeywell approved waste facilities, in the event that BMUA's Contractor takes the lead on transportation/disposal of chromium-impacted soils.

B. Contractor's work includes determining the recipient of the waste, loading wastes into trucks and containers for shipment off site, providing temporary haul roads for trucks and traffic control as needed, and coordination and scheduling with Transportation Contractor and Disposal Facility to ensure timely arrival and departure of trucks.

C. All work related to the management of chromium-impacted materials shall be done in conformance with a Health and Safety Plan (HASP), and in accordance with OSHA 1910.120. All personnel that may become exposed to impacted materials at levels above NJDEP criteria must be OSHA trained in accordance with OSHA requirements. The HASP will be reviewed by BMUA. Refer to the Worker Training Manual for applicable training requirements.

1.02 SUBMITTALS

A. Prepare and submit a comprehensive detailed Materials Management Plan. This comprehensive plan shall address all waste categories: Rubbish and Construction Debris, Non-Hazardous Waste and Hazardous Waste.

B. If required by BMUA, prepare and submit a Traffic Control and Transportation Plan at least 30 days prior to the excavation. The Traffic Control and Transportation Plan shall include, as a minimum: a proposed truck route from the on-site loading staging area to the disposal facility, traffic control, and alternate traffic patterns. The route(s) to and from the disposal facility shall be in accordance with the disposal facility requirements and Federal, State and local regulations, laws, and ordinances. The Contractor shall specify the weight limitations on all sections of the route(s) and indicate the maximum truck load/weight that will be maintained in accordance with route weight limits and any other applicable Federal, State and local regulations. In addition, the plan should outline the procedures that will be followed to comply with all applicable traffic and transportation regulations.

C. Submit resume for Contractor's proposed Transportation and Disposal Coordinator.

D. Submit technical data for the specified truck liner material and installation procedures.

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1.03 QUALITY ASSURANCE

A. BMUA in coordination with Honeywell will monitor the Contractor's activities associated with the work of this Section. This monitoring may include but not be limited to:
   1. Verifying Contractor conformance with requirements for on-site management of excavated chromium-impacted materials;
   2. Reviewing requests from Contractor for off-site reuse, recycling, treatment, and disposal facilities, associated chemical testing and documentation of chromium-impacted waste materials acceptance by receiving facilities; and
   3. Verifying the appropriate Contractor-prepared paperwork accompanies each load of excavated soil and material that is transported from the site and verifying receipt of Contractor's submittal of paperwork for off-site facility receipt and processing of site materials.

PART 2 - PRODUCTS

2.01 GENERAL

Not applicable.

PART 3 - EXECUTION

3.01 GENERAL

A. Transportation and Disposal Coordinator (TDC). The Contractor shall designate, by position and title, one person to act as the Transportation and Disposal Coordinator. The TDC shall be on-site full time. The TDC shall serve as the single point of contact for all environmental regulatory matters, and shall have overall responsibility for environmental compliance at the site including, but not limited to, accurate identification and classification of hazardous waste and hazardous materials, determination of proper shipping names, identification of marking, labeling, packaging and placarding requirements, completion of waste profiles, hazardous waste manifests, bills of lading, exception and discrepancy reports, and ail other environmental documentation. In addition, the TDC responsibilities shall include maintaining any hazardous waste being stored in compliance with all applicable regulations (i.e. proper stockpiling) prior to shipment off-site. The TDC shall have, at a minimum, five-years of specialized experience in the management and transportation of hazardous waste. The TDC shall have appropriate DOT, OSHA and EPA training.

3.02 HAUL ROADS

A. The Contractor shall construct and maintain temporary haul roads onsite from the site entrance to the locations of active excavation, stockpiles, weigh scales and truck washing facility, as needed to complete the work. Haul roads shall be maintained to permit efficient travel of fully loaded trucks. Contractor shall provide traffic control, such as signs and flaggers.

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B. Contractor shall prepare contingency plans for handling disabled vehicles, providing designated areas for queuing trucks, snow removal, lighting and any other facilities necessary to provide for efficient travel of trucks on-site.

3.03 COORDINATING WASTE SHIPMENTS

A. Contractor will obtain letters of acceptance/commitment from waste haulers and from the TSDFs agreeing to handle and dispose wastes. Letters shall specifically state what types and quantities of waste the facility will accept. A copy of each letter shall be maintained in the Contractor's file.

B. Contractor shall coordinate shipment of waste to a Honeywell approved waste facility, for each class of waste. Contractor shall be responsible for determining the disposal facility's testing requirements and other acceptance requirements, and complying with those requirements for each shipment of waste.

C. Contractor shall prepare daily and weekly schedules for shipment of waste to each disposal facility, identifying the quantities and dates of shipments.

D. Contractor shall coordinate the supply of trucks necessary for shipment of waste from the site to the TSDF. Contractor shall coordinate the number of trucks in service to meet Contractor's schedule. The Contractor shall coordinate the schedule for vehicle arrival and material deliveries at the construction site to meet the approved project schedule. The schedule shall be compatible with the availability of equipment and personnel for material handling operations and ensure that the excavation schedule is maintained.

3.04 SHIPPING DOCUMENTS AND PACKAGING CERTIFICATION

A. The Contractor shall be responsible for obtaining all permits and shipping documents (from the TSDF or regulatory authorities) to ship hazardous wastes off site, either within the USA or outside of the USA.

B. The Contractor shall use manifests for transporting hazardous wastes as required by 40 CFR 263. Transportation shall comply with all requirements in the Department of Transportation referenced regulations in the 49 CFR series. The Contractor shall prepare manifests in accordance with the hierarchy established in 40 CFR 262, Section 21.

C. The Contractor shall prepare hazardous waste manifests for each shipment of hazardous waste shipped off site. Manifests shall be completed using instructions in 40 CFR 262, Subpart B and any applicable state or local law or regulation. Manifests and waste profiles shall be submitted to BMUA and Honeywell for review and approval. The Contractor shall prepare land disposal restriction notifications as required by 40 CFR 268 or any applicable state or local law or regulation for each shipment of hazardous waste. Notifications shall be submitted with the manifest to BMUA and Honeywell for review and approval.

D. The Contractor shall verify that each truck and-or container complies with applicable permitting.

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3.05 LOADING TRUCKS

A. Chromium impacted waste shall be loaded into trucks or containers within the exclusion area. Trucks will include liners. When loading is complete, the liner flaps shall be placed over the top of the chromium impacted waste prior to covering the waste in a manner to prevent contact adjacent to the loading area with the road tarp.

B. Contractor shall provide liners for trucks used to transport hazardous chromium-impacted waste materials. Contractor shall assume and use trucks and truck liners with a truck capacity of 18-cubic yards (loose). **Liners shall consist of a 7.4-oz Woven Polypropylene outer layer to provide strength, and a 3 mil Polyethylene inner layer as manufactured by PACTEC. Contractor shall be advised that these liners are heavy duty liners, and will require specialized scaffolding or other techniques to install. Normally 2 to 4 workers are required to line each truck prior to filling, and to zip closed once filling is complete. At no time will a worker enter the truck bed.**

C. When truck loading is complete, the truck shall be decontaminated.

D. Each loaded truck shall be weighed on-site.

E. Each truck shall have a proper manifest and placard prior to leaving the site.

F. Each truck entering and exiting the site shall be recorded and entered into the Disposal Manifest and Management system.

3.06 WEIGH SCALE

A. The Contractor shall provide a system to weigh loaded trucks before they leave the site to confirm the maximum weight restriction for anticipated travel route is not exceeded. The system can include trucks equipped with load cells or a portable truck scale or similar device approved by BMUA and/or Honeywell's Representative.

3.07 HAULING BY TRUCK

A. The Contractor shall ensure that the vehicle is properly decontaminated, weighed and has the proper manifests and placards before the truck leaves the site.

B. The Contractor shall respond and remedy situations involving material spilled in transit or mud and dust tracked off-site, within a distance of one mile from the site.

C. The Contractor shall protect trucks against contamination by properly covering and lining them with compatible material or by decontaminating them prior to any use other than hauling contaminated materials. The Contractor is responsible for inspection of transportation vehicles prior to leaving the site, to verify no material adheres to the wheels, undercarriage, tailgates, covers or other areas of transport vehicles.

D. The Contractor shall utilize truck tarps on all trucks entering and exiting the site.

--END OF SECTION--

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ATTACHMENT A

LIST OF HONEYWELL APPROVED WASTE FACILITIES

(To be provided by Honeywell)

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Draft Document - Honeywell Confidential
This document is for Honeywell use only and
is not to be distributed to unauthorized personnel.

HONEYWELL APPROVED FACILITIES - FOR RESPONSE ACTIONS AT HUDSON COUNTY CHROMATE SITES

Country	State / Province	City	Waste Management Facility Name	Address	Postal Code	Tel No. or Web Site	Regulatory ID
USA	New York	Model City	Chemical Waste Management (CWM Chemical Services)	1550 Balmer Rd	14107	786-286-1550	NYD049836679
USA	New Jersey	South Kearny	Clean Earth Of North Jersey, Inc.	105 Jacobus Avenue	7032	973-344-4004	NJD991291105
USA	Pennsylvania	York	Envirite	730 Vogelsong Road	17404	717-846-1900	PAD010154045

APPENDIX E

REFERENCE BAYONNE MUA RULES AND REGULATIONS FOR SITE WORK, EXCAVATION AND BACKFILL

501. GENERAL REQUIREMENTS

The term "Design Engineer" and "Architect" are used interchangeably within the Contract Documents and are intended to refer to the Owner's Design Representative familiar with the design or construction phases of the project. The term “City” shall refer to the City of Bayonne or their Consulting Engineer, and the term “Authority” and “Engineer” shall refer to the Bayonne Municipal Utilities Authority and the Authority Consulting Engineer and are intended to refer to local agencies familiar with the approved design plans and specifications and responsible for providing review and approval of the project.

The Technical Specifications consists of sixteen (16) Items as follows:

Section 502	Site Work and Restoration
Section 503	Excavations and Backfill
Section 504	Broken Stone or Screened Gravel Foundation
Section 505	Backfill Materials
Section 506	Pre-cast Concrete Manholes
Section 507	Furnishing and Installing Ductile Iron Sewer Pipe
Section 508	Bypass of Combined/Sanitary Sewer Flows
Section 509	Pre-cast Concrete Catch Basin Inlets
Section 510	Reinforced Concrete Pipe
Section 511	PVC Sewer Pipe
Section 512	Furnishing and Installing Ductile Iron Water and Force Mains
Section 513	Furnishing and Installing Ductile Iron Fittings (Mechanical Joint) for Water and Force Mains
Section 514	Furnishing and Installing Underground Valves and Valve Boxes for Water Mains
Section 515	Furnishing and Installing Fire Hydrants
Section 516	Furnishing and Installing Water Services
Section 517	Furnishing and Installing Sewer Service Connections

Road opening permits must be obtained from the City of Bayonne Building Department prior to undertaking any construction in or along the City of Bayonne public right-of-ways. Backfill and resurfacing of County and NJDOT roadways shall be as per the requirements of the County and NJDOT. The Contractor is specifically alerted to include the requirement for traffic control, working hour restrictions, and provision of uniformed Municipal Policemen when working within municipal, County, and NJDOT rights-of-ways.

The construction schedule is to be coordinated with the Owner, the Design Engineer, the City of Bayonne, the Bayonne Municipal Utilities Authority, and the Engineer. Regularly scheduled job meetings are to occur at least monthly during the full contract period and thereafter as may be necessary.

501.1 Additional Information

501.1.1 Insurance and Time Limits

The Contractor is to refer to the appropriate sections of the Authority Rules and Regulations for insurance requirements and time limits relating to project completion.

501.1.2 Patents and Royalties

If any design, device, material or progress covered by letters, patent or copyright is used or installed by the Contractor, he is to secure, pay for and provide for such use by legal agreement with the holder of the patent or a duly authorized licensee of such holder, and is to save harmless the Authority and Engineer from any and all loss or expense on account of including its use by the Owner.

501.1.3 Guarantees

All work, materials, and equipment furnished under this Contract are to be guaranteed by the Contractor to perform the services required of them, to the full satisfaction of these Specifications, for a period of two (2) years from the date of the final acceptance.

501.1.4 Other Contracts

The Owner may let other contracts related to the work of the Contractor. The Contractor is to cooperate with other contractors with regard to storage of materials and execution of the work. It is the Contractor's responsibility to inspect all work by other contractors affecting his work and to report to the Owner any irregularities which will not permit him to complete his work in a satisfactory manner. His failure to notify the Owner of such irregularities indicates the work of other contractors has been satisfactorily completed to receive his work.

The Contractor is not responsible for defects of which he could not have known, which develop in the work of others after the work is completed. Where work under this Contract is to be connected to work under other contracts, it is the responsibility of the Contractor to measure the completed work in place and report to the Owner immediately any difference between completed work by others and the provisions of the Contract Documents.

501.1.5 Witness Testing

All testing of materials and equipment specified under the various sections of these Contract Documents is to be witnessed by the Engineer. The Contractor will give the Engineer a minimum of 72 hours of advanced notice of such testing (Saturday, Sunday, and Holidays not included) and will make reasonable accommodations for the Engineer to witness such testing.

501.2 Special Project Procedures

501.2.1 Emergency Telephone

The Contractor is to maintain telephones at all times after regular working hours, including weekends and holidays, where he or his representatives can be reached on an emergency basis. The Contractor or his representatives are to be prepared to act to correct conditions on the site deemed to constitute an emergency by either the Owner, his agent, the Design Engineer, the City of Bayonne, the Authority, or the Authority's Consulting Engineer, but he is not to wait for instructions before proceeding to properly protect both life and property. If a condition on the site requires attention after working hours, either the Owner, his agent, the Design Engineer, the City of Bayonne, the Authority, or the Authority's Consulting Engineer may call the Contractor or his representatives at the emergency telephone number, identify himself and describe the emergency condition. The Contractor is expected to dispatch men and equipment to adequately institute corrective measures within two (2) hours. If, for some reason, the Contractor or his agent cannot be reached at the emergency number after a reasonable time (l/2 hour), the Owner will have the right to immediately initiate corrective measures in accordance with the Article which follows, covering Emergency Services to Correct Hazardous Conditions, and the Contractor will be considered to have waived any right to perform emergency service.

501.2.2 Emergency Services to Correct Hazardous Conditions

In the event that the Contractor fails to maintain safe job conditions or traffic conditions, including, but not limited to, trench settlement and hazardous piling or storage of backfill or construction materials, the Owner, after failure of the Contractor to commence substantial steps at the job site to rectify the situation within two (2) hours of the time the contractor has been notified, pursuant to the preceding paragraph, of the unsafe conditions, may hire guards, take such precautions, make such repairs and take any other steps which the Owner or the Owner's agent, in its discretion, considers necessary to protect the property, persons, or the Owner. The cost of any of these precautions, guards, or steps will be deducted from the payments due the Contractor, and the Contractor will be billed for these services, work, and materials at prevailing rates.

501.2.3 Notification to Utility Companies and Owners of Buried Pipelines

The Contractor is to comply with all provisions of the "Underground Facility Protection Act" (Public Law 1994, Chapter 118). The Contractor is to give notice at least three (3) business days and not more than ten (10) business days prior to the start of any work in the vicinity of existing utilities or appurtenances to the Garden State Underground Plant Location Service (N.J. One-Call System at 1-800-272-1000). The Owner is to be furnished, in writing, with the date such notice was given and the Garden State Underground Plant Location Service "Markout Confirmation Number", prior to the

start of any work. In addition, it is the responsibility of the Contractor to notify the Owner of any utility, which is not a member of the "N.J. One-Call System".

501.2.4 Work In Bad Weather

During freezing, stormy or inclement weather, no work is to be done except such as can be done satisfactorily and in a manner to secure first-class construction throughout.

When required, protection is to be provided by use of tarpaulins, wood and building paper shelters, or other approved means.

During cold weather, materials are to be preheated, if required, and the materials and adjacent structure into which they are to be incorporated are to be made and kept sufficiently warm so that a proper bond will take place and a proper curing, aging or drying will result. Protected spaces are to be artificially heated by approved means, which will result in a moist or dry atmosphere according to the particular requirements of the work being protected. Ingredients for concrete and mortar are to be sufficiently heated so that the mixture will be warm throughout when used.

The Contractor shall also take measures to prevent run-off from entering the work area.

501.2.5 Explosives

Explosives are not to be stored at the site of the Project. If explosives are required, their use may be permitted after discussions with the City of Bayonne, the City Engineer, Authority, and the Engineer and written permission all parties having jurisdiction, and only under the supervision of competent licensed blasters.

501.3 Coordination

501.3.1 General

The review and coordination of shop drawings, actual execution of the work, and testing between general construction work, equipment and piping installation, pertinent instrumentation and electrical work is the responsibility of the Contractor.

The Design Engineer and the Engineer will check each shop drawing submitted to determine whether it complies with the intent of the Contract Documents and the design. This same requirement is placed on the Contractor and his supplier.

It is the intention of the Contract Documents to place various materials of construction and related requirements in their proper place in the specifications. However, no guarantee is made that such locations are, in every instance, where the Contractor might expect to find them.

The Contractor is required to provide, or make available, all appropriate documentation to each vendor and subcontractor, both prior to bid to ensure proper Proposals, and during construction to insure compliance with the intent of the Contract Documents. This is the sole responsibility of the Contractor.

The Design Engineer and the Engineer are not responsible for project coordination between various subcontractors, which is the responsibility of the Contractor. The Engineer will observe, by attendance at regularly scheduled job meetings, the orderly flow and progress of the work. The various subcontractors and those people responsible to them are required to interact with each other to insure that the work progresses in an orderly fashion and without exceeding the time allotted in the Contract.

The Contractor is responsible for reading all the Specifications. His review of all the Contract Documents as well as shop drawings, coordination drawings and other information required to complete the project is his sole responsibility. He is to request clarification on any matters where ambiguities might exist, in order to receive instruction as to the proper documents to follow.

All products or materials which require the selection of color finishes are to be submitted early and with sufficient lead time to permit the Authority, or Owner if the proposed facilities are not going to be owned and operated by the Authority, to develop an overall color coordination system for use by the Contractor in the final installation. Delays in submitting such product or material samples or color charts at one time may delay the selection process and prevent the Contractor from granting suppliers final releases for fabrication.

501.3.2 Working Hours

The Contractor should generally limit construction operations and activities between the hours of 7:00 a.m. to 4:00 p.m. unless law establishes stricter limitations. No pile driving, pulling or other noisy operations, or operations entailing the use of vibratory hammers or compactors will be permitted, other than between the hours of 8:00 a.m. to 4:00 p.m. The Contractor must also abide by the provisions of the Article of the contract entitled, "Night, Sunday, & Holiday Work".

The Contractor must also have all work completed (including backfilling, plating, and cleanup) on all County and NJDOT roads by 3:00 p.m. each afternoon. The Bayonne Municipal Utilities Authority will strictly enforce this requirement, and the Contractor shall include any hardship anticipated in his bid items.

501.4 Field Engineering

501.4.1 Method of Construction

Before starting the work, and from time to time during its progress as the Design Engineer or the Engineer may request, the Contractor is to outline to the Design Engineer and the Authority's Consulting Engineer the methods he plans to use in doing the work and the various steps he intends to take.

501.4.2 Additional Instructions and Detail Drawings

The Design Engineer may furnish the Contractor with additional instructions and detailed drawings as may, in the opinion of the Engineer, be required to clarify the work included in the Contract. The additional drawings and instructions, thus supplied to the Contractor, will be coordinated with the Contract Documents and will be so prepared that they can be reasonably interpreted as a part thereof. The Contractor is to carry out the work in accordance with any additional detailed drawings and instructions. Additional instructions and detail drawings are not to be considered extra work.

501.5 Regulations

501.5.1 General

All work under this Contract is to comply with all applicable requirements of Federal, State and local statutes, regulations, and codes, and especially the safety provisions contained therein.

Certain work to be done within the scope of this Contract may be required to meet the specification of persons, municipalities or bodies other than the Owner and the Authority. The Contractor is to be responsible for obtaining the approval and acceptance of his completed work by such persons, municipalities, counties and similar bodies. Such work may include, but is not to be restricted to installation of sidewalks, curbs, pavement or utilities; plumbing, electrical and building construction work or other incidental work required to complete the Contract.

501.5.2 Environmental Protection

The Contractor is to minimize environmental impact due to his construction operations during all phases of his work. This shall include, but is not limited to, prohibition of the following construction procedures.

1. Dumping of spoil material into any stream corridor, any wetlands, any surface waters, or any unspecified locations.

2. Indiscriminate, arbitrary, or capricious operation of equipment in any stream corridors, wetlands, or surface waters.

3. Pumping of silt-laden water from trenches or other excavations into catch basins, surface waters, stream corridors, or wetlands.

4. Damaging vegetation adjacent to or outside of the access road or the right of way.

5. Disposal of trees, brush, and other debris in any stream corridors, wetlands, surface waters, or at unspecified locations.

6. Permanent or unspecified alteration of any flow line of any stream.

7. Open burning of project debris.

8. Use of chemicals for dust control.

9. Use of asphaltic mulch binder.

10. Discharge of test waters with high chemical disinfectant or other pollutant concentrations.

The Contractor shall protect, to the dripline, all trees not designated by the Engineer, the City of Bayonne, or the Authority to be removed.

The Contractor is directed to the appropriate sections of the Specifications for additional information regarding environmental work and protection.

501.5.3 Labor, Safety, Health and Security Regulations

The Contractor is to refer to the appropriate portions of Information for Bidders regarding Regulations.

The Contractor is to provide adequate signs, barricades, red lights and uniformed guards and take all necessary precautions for the protection of the workers, the work and the safety of the public. All traffic control shall be in accordance with the requirements of the latest edition of the USDOT "Manual of Uniform Traffic Control Devices". All barricades and obstructions are to be protected at night by suitable signal lights which are to be lit from sunset to sunrise. Barricades are to be of substantial construction and painted such as to increase their visibility at night. Suitable warning signs are to be so placed and illuminated at night as to show in advance where construction, barricades or detours exist.

The Contractor is to keep on proper lights each night between the hours of sunset and sunrise at and upon all portions of his work; upon all ranges or other stakes in

connection with the work, when deemed necessary by the Owner, the Authority, or by the proper authorities, or when required by the liability insurance coverers, and is to be responsible for all injuries and damages resulting from neglect or failure in this respect. Night lighting must be so sized, concentrated and located so as to cast sufficient illumination around new construction and excavations. All excavations and obstructions must be properly marked, lighted and provided with railing and other guards.

The Contractor is to maintain sufficient guards by day and night to prevent accidents of any kind or character whatsoever, and will be liable for any damage, which may arise from any negligence on his part or that of his agents and employees.

If, at any time, in the opinion of the Owner, the Engineer, the City, of the Authority, the work is not properly lighted, barricaded, and in all respects safe in respect to public travel, persons on or about the work, or public or private property, the Owner will have the right, but not the obligation, to order such safeguards to be erected and such precautions to be taken as he deems advisable, and the Contractor is to promptly comply with such orders. If, under such circumstances, the Contractor does not or cannot immediately put the same into proper and approved condition or if the Contractor or his representative is not upon the grounds so that he can be immediately notified of this insufficiency of safety precautions in accordance with the procedures for notification of the Contractor specified under "Emergency Telephone", then the Owner may put the work into such a condition that it shall be, in his opinion, in all respects safe and the Contractor is to pay all expenses of such labor and materials as may have been used for this purpose by him or by the Owner. Such action of the Owner, or his failure to take such action, will in no way relieve the Contractor of the entire responsibility for any cost, loss, or damage by any party sustained on account of the insufficiency of the safety precautions taken by him, by the Owner acting under authority of this Section.

501.5.4 Sanitation

Sanitary conveniences, properly screened from public observation, for the use of all persons employed on the work and beginning with the first persons engaged in preliminary operations, are to be provided and maintained by the Contractor in sufficient numbers, in such a manner and at such locations as will be approved. Sanitary facilities are to be completely self-contained, chemically treated and regularly serviced.

501.5.5 Fire Safety

The Contractor is held responsible and is to maintain conditions, which promote fire safety in his operations at all times. Materials that could constitute a fire hazard such as gasoline, paints, wood and paper products are to be safely stored.

501.6 Project Meetings

501.6.1 Pre-construction Conferences

The Contractor shall schedule a pre-construction conference with the Owner, the Engineer, the City, and Authority to discuss the proposed schedule for construction and to coordinate construction observation and shop drawing submissions.

501.6.2 Job Meetings

The Owner may schedule regular job meetings at least monthly during the life of the Contract. The time and location of meetings is to be set by the Owner. The Contractor, unless otherwise notified by the Owner, is to have an authorized representative attend each meeting.

The purpose of these meetings is for maintaining communication between the Owner, Engineer, City, Authority, and Contractor, including the Contractor's subcontractors and suppliers. The meetings are to be used to coordinate various parts of the work, update construction schedules, prepare progress estimates and respond to questions which may be raised by the various participants.

501.7 Submittals

501.7.1 General

This section covers a variety of different types of documents, drawings, and material which the Contractor is to provide to the Engineer or Owner, and the Authority for their approval, information, or use. Submittals will include, but not be limited to: bonds, shop drawings, samples, color charts, operating and maintenance manuals, parts lists, spare parts and materials, special tools, and guarantees.

These items are to be submitted as specified in this Section and other Sections of the Specifications, in the proper quantities, and in a timely manner.

501.7.2 Shop, Coordination, Setting and Installation Drawings and Samples

The Contractor shall promptly submit to the Design Engineer, and the Engineer one (1) reproducible and four (4) copies of detailed shop drawings, guaranteed test curves, and manufacturer's specifications for all equipment, tools and furnishings to be supplied under this Contract. Detailed shop drawings shall be submitted for items such as backfill material, manholes, piping, ducts, miscellaneous metals, reinforced plastics, structural steel, reinforcing steel, mechanical equipment, fabricated items, electrical components, instrumentation and other work, whether or not mentioned in this section.

The Contractor shall submit these data with such promptness as to avoid delay in the work. **Unless otherwise approved in writing by the Authority, all materials,**

equipment, and appurtenance shop drawings required by the construction of this project must be submitted and approved by the Engineer prior to the placement of any manufacturer or supplier orders. Mechanical items, electrical items, instrumentation, reinforcing steel, and other items requiring long lead times and extensive review time shall be submitted first. In order for the Contractor to be deemed to have fulfilled this requirement, his individual submissions must be complete in every respect so that a logical and orderly review might follow. Piecemeal submissions are not acceptable. Final submissions for approval must be complete in all respects.

When dimensions are of particular importance, the drawing must be certified by the manufacturer as correct for this project.

The Engineer, and Design Engineer will review submitted data within a reasonable time after receipt of such data considering the complexity and completeness of such submissions. He shall determine at his sole discretion whether the data submitted are sufficient to render a decision. Resubmission of drawings by the Contractor for the Engineer's or Design Engineer's approval must be completed within ten (10) days of the return of the previous submission by the Engineer, or Design Engineer, unless the Authority Engineer specifically agrees to the contrary.

No materials, equipment or specialties are to be purchased, fabricated or released until the Engineer has approved the shop or working drawings as conforming to the contract requirements. All materials and work involved in the construction shall then be as represented by such drawings.

Shop drawings are to be not smaller in size than 8-1/2" x 11" nor larger than 30" x 42". Reproductions of the Design Engineer's drawings will not be acceptable as shop drawings. Before submitting shop drawings, the Contractor must check and sign all drawings, noting thereon any deviation from the Specifications.

One (1) reproducible and four (4) copies of shop drawings, test curves, or other material are to be submitted for approval. Following his review, the Engineer will return two (2) copies to the Contractor. If shop drawings are checked "Amend and Resubmit" by the Engineer, the Contractor must resubmit one (1) reproducible and four (4) copies of the revised shop drawings, of which two (2) will be returned to the Contractor by the Engineer.

The Contractor is to be responsible for furnishing subcontractors with approved shop drawings as required. No shop drawings are to be used for construction, ordering, fabrication, or other reasons unless marked "No Exceptions Taken" or "Make Corrections Noted" by the Engineer.

The Contractor is to note the difference in action expected by the Design Engineer or the Engineer with regard to Authority required drawings such as shop, coordination and installation drawings, and those that are presented by the Contractor, by his own choice, and for his convenience. Authority required drawings are to be construed as those,

which define shop systems work, parts drawings, fabrication drawings, test reports, certifications, and manufacturer's installation requirements. These will be reviewed and stamped appropriately by the Engineer after detailed review.

Contractor's coordination and/or installation drawings which are presented at his option are to be construed as those which assist the Contractor in his orderly execution of the work. Such drawings will be reviewed by the Engineer only as a convenience afforded the Contractor and shall not be stamped by the Engineer.

All Authority required drawings are to be stamped by the Contractor certifying his review and approval thereof. The stamp is to bear the following information:

APPROVED FOR CONTRACT REQUIREMENTS

The Contractor's signature below indicates that he has checked the drawing with the Specifications and found it to meet all requirements of same including dimensions, and that the Contractor's guarantee fully applies to the specified material or equipment.

RE: Specification Section _____ Page No. _____ Paragraph No.

Drawing Sheet _____ By: _____
Signature/Contractor

Approval of any shop drawings, manufacturer's specifications, or other material by the Design Engineer, or Engineer, does not relieve the Contractor of the responsibility for:

a) Errors of any sort in shop or setting drawings or schedules.
b) Deviations from Specifications unless the Contractor has given written notice to the Design Engineer and Engineer of any such deviations at the time of submission.
c) Responsibility for proper performance of his work.
d) Coordination with other trades.
e) Safety and security on the job site.

Data must include dimensions, detailed drawings, and manufacturer's specifications for all items. Specific data required are set forth under the various Specifications items, but in general, are to include characteristics and efficiency curves for all motors and pumps, as well as weights of equipment to be delivered.

When required by the specifications, the Contractor is to furnish duplicate samples of materials, finishes or other items proposed to be used in the work. All materials, finishes and workmanship incorporated in the work are to be similar and equal to the approved samples. The Engineer shall retain such samples until final acceptance of the project and return only those samples specifically requested.

501.7.3 Operating and Maintenance Instructions

The Contractor is to furnish six (6) sets of approved operating and maintenance instructions, completely covering the operation and maintenance of all equipment. In addition, he is to neatly frame one (l) set of concise operating and maintenance instructions for each piece of equipment and deliver them to the Owner. Manuals are to be bound in hard covers and include, as a minimum, the following for each piece of equipment and device:

l. Manufacturer's descriptive literature.

2. Maintenance instructions, including recommended lubricants and lubrication schedule, spare parts, parts lists and assembly drawings.

3. Troubleshooting and repair information and charts.

4. Performance data.

5. Copies of all approved Shop Drawings.

6. Recommended spare parts lists, including part numbers.

7. Provided spare parts listing, including part numbers.

All operating and maintenance instructions are to be submitted prior to the Contract reaching fifty (50%) percent of completion.

501.7.4 Special Tools

The Contractor is to furnish with each equipment item furnished, all special tools required and recommended by the manufacturer. This requirement is in no way intended to cover the furnishing of readily available tools for mechanical work.

501.7.5 Packing

All equipment requiring packing is to be furnished newly packed with the packing recommended by the equipment manufacturer. The Contractor is to furnish six (6) copies of a schedule listing the type and manufacturer of the packing recommended for each piece of equipment. He is also to furnish sufficient packing to repack each piece of equipment once, or as otherwise specified.

501.7.6 Lubrication

The Contractor is to furnish and use, for each piece of equipment, the type of oil and grease recommended by the manufacturer of the equipment. He is to furnish six (6) copies of a schedule listing the type, frequency of application, and manufacturer of the

oil and grease recommended for each piece of equipment. At the time of turning the installation over to the Owner, the Contractor is to furnish sufficient quantities of lubricants to cover the period of start-up from regular break-in to the first oil change and time to reorder after takeover by the Owner.

501.7.7 Record Drawings – The Contract is to keep accurate records of all deviations of his work from that shown on the approved drawings, and indicate the actual construction with colored lines on a set of wet drawings. The as-built drawings shall be provide to the Design Engineer who will then prepare the As-Built Drawings for submission to the Authority as required under the Authority's Rules and Regulations.

501.8 Quality Control

501.8.1 Conformance and Specifications

All work is to be built in a thoroughly substantial and workmanlike manner, in accordance with the Specifications and directions given from time to time by the Design Engineer or the Engineer. In no case will any work in excess of the requirements of the Specifications be paid for, unless ordered in writing by said Owner.

501.8.2 Lines, Grades and Measurements

It is the Contractor's responsibility to obtain and keep proper lines and grades as required by the project.

501.8.3 Dimensions of Existing Structures

The Contractor is to verify in the field, the dimensions and locations of existing structures, where an error or incomplete information relative to the location or dimension of existing structures would affect the construction to be done under this Contract. The Contractor is to verify such dimensions and locations before continuing with the construction work to the point where it would be affected.

501.8.4 Datum

All elevations used in the project shall be based on a NAVD 1988 datum.

501.8.5 Standard Specifications

All standard specifications referred to herein, such as NJDOT, ANSI, ASTM, AWWA, and the like, unless otherwise noted are to be the latest revision thereof, at the time of bidding.

501.8.6 Services of Testing Laboratories and Special Consultants

The Authority may require and the Owner may retain the services of an independent testing laboratory to do such sampling and to make such tests as the Authority or Engineer may deem necessary to verify that the materials and equipment proposed for or incorporated into the work conform to the requirements of the Contract Documents. Any materials found not in compliance with the Authority's Rules and Regulations shall be removed and replace at no additional cost to the Contract.

501.8.7 Watertightness

The attention of the Contractor is called to the specific requirements of this Contract whereby the most rigid supervision will be required to insure an absolute minimum of leakage or infiltration in the case of liquid conveying or liquid containing structures.

In general, all structures and all pipe and appurtenant structures are to be of watertight construction. Any leakage is to be repaired in accordance with the appropriate sections of the Specifications.

The Contractor is to provide, maintain and operate suitable and adequate dewatering equipment to insure satisfactory construction and maximum progress.

In certain instances dewatering permits may be required by regulatory agencies. The Owner shall obtain such permits from the New Jersey Department of Environmental Protection.

501.8.8 Clean-Up

During the course of construction all efforts must be made to maintain a neat and orderly project. Clean-up is to be pursued on a regular basis and in conjunction with the construction. The Contractor is to be responsible for clean-up during the life of this Contract with the full cooperation of all subcontractors. Upon completion of all construction, final clean-up is to include removal of all excess materials, equipment, backfill, etc., and the site is to be restored to a condition equal to or better than that existing prior to construction. Should the Contractor fail to remove such material, equipment and supplies, the Owner has the right to remove them at the expense of the Contractor.

At the completion of construction, the Contractor must tear down and remove all temporary structures unless expressly directed otherwise, and remove remaining rubbish of all kinds from all Contract structures, and from the site occupied during the progress of the work. The Contractor is to remove all concrete and ballast droppings and leave the site and the adjacent property which may have been affected by his operations in a neat and satisfactory condition. All structures and parts thereof constructed by the Contractor are to be thoroughly cleaned and left in first-class condition.

501.9 Construction Facilities and Temporary Utilities

501.9.1 Maintenance of Structures, Utilities, and Natural or Man-Made Surroundings

All existing utilities and/or process systems are to be kept in operation at all times during construction operations unless prior arrangements have been made to provide alternative service.

From the commencement of work, the Contractor is to be solely responsible for the care of the work during its progress for materials delivered and intended to be used, and for the protection to existing structures and trees or shrubs on or adjacent to the site of the work. Any injury or damage to the same is to be made good at the Contractor's expense.

Bypassing of sanitary flows are prohibited. Should any inadvertent bypassing of sanitary flows occur, the Contractor shall immediately notify the Authority, and appropriate notification is to be given to the NJDEP.

501.9.2 Occupying Private Land

The Contractor is not to enter or occupy with workers, tools, materials, or equipment, any land outside the easements or property of the Owner, unless written consent from said private property owner has been given to the Contractor and a copy of the consent provided to the Owner beforehand.

501.9.3 Existing Construction and Facilities

When new construction is adjacent to, or crosses streets or utilities under the jurisdiction of State, County, City or other public agency, public utility or private entity, the Contractor must secure written permission from the proper authority before executing such new construction. A copy of this written permission must be filed with the Authority before any work is done. The Contractor is to replace or repair all existing construction damaged in the execution of this contract. The Contractor will be required to furnish a release from the proper authority before final acceptance of the work.

501.9.4 Public Convenience

The Contractor is at all times to conduct his work so as to insure the least possible obstruction to traffic and inconvenience to the general public and residents in the vicinity of the work, and to insure the protection of persons and property. No road or street is to be closed to the public except with the permission of the proper authorities.

Fire hydrants on or adjacent to the work are to be kept accessible to fire-fighting equipment at all times. Temporary provisions are to be made by the Contractor to insure the use of sidewalks and the proper functioning of all gutters, sewer inlets, drainage ditches, and irrigation ditches, which are not to be obstructed.

The Contractor is solely responsible for satisfactorily maintaining flows in the existing utilities, affected by the work, at all times during the course of construction, unless otherwise indicated in the Contract Documents.

The Contractor is to review his construction schedule with the Authority, the City Engineer, and the Bayonne Police Department with respect to interruption of traffic and revise it accordingly if the City Engineer or the Police Department so requires.

501.9.5 Temporary Utilities

Unless otherwise agreed to by the Owner, the Contractor is to make all necessary arrangements for temporary utilities required or herein specified. No specific payment will be made for the costs of such utilities, but the costs thereof are to be included in the price bid for the work. Upon completion of the work, the temporary utilities are to be removed.

a) Telephone: The Contractor is to provide a job site telephone or use public pay phones at no charge to the Owner.

b) Electric: The Contractor shall provide temporary electricity for himself and his subcontractors.

c) Water: The Contractor may be allowed to use City water for temporary water required during construction. The Contractor shall obtain written approval from the Authority for use of any hydrants for this project, prior to their use. (A copy of this letter shall be sent to the Owner and Design Engineer.) The cost of temporary utilities, including any setup or connection costs, are to be borne by the Contractor and included in the price bid.

501.10 Material and Equipment

501.10.1 Construction Equipment

Contractors are to familiarize themselves thoroughly with the type and nature of the equipment required in the proper execution of the work, and are to use and employ only first-class equipment. Previously used equipment must be in safe, first-class working order and condition. Sufficient equipment must be furnished and used by the contractor to permit the completion of the work within the time specified. The equipment used on

any portion of the work is to be such that no injury or damage to the streets, adjacent property, or utilities will result from its use.

501.10.2 Materials

Unless otherwise specified, only new materials are to be incorporated into the work. All materials furnished by the Contractor to be incorporated into the work may be subjected to the inspection and approval of the Engineer. No material is to be processed, fabricated, or delivered to the work without the prior approval of the Engineer, except at the risk of the Contractor.

The Contractor is to submit, to the Design Engineer and Engineer, data relating to materials he proposes to furnish for the work. Such data are to be in sufficient detail to enable the Engineers to identify the particular product in question and to form an opinion as to its conformity to the Authority Rules and Regulations. This data must be submitted for review and approval as soon as possible and prior to the ordering of any materials for construction.

Facilities and labor for the handling and inspection of all materials are to be furnished by the Contractor. Defective materials must immediately be removed from the site of the work.

If the Engineer so requires, either prior to beginning, or during the progress of the work, the Contractor is to submit samples of materials for such specific tests as may be necessary to demonstrate that the materials conform to the Specifications. Such samples are to be furnished, taken, stored, packed, and shipped as directed, at the expense of the Contractor. Except as otherwise noted, the Owner will make arrangements for and pay for tests.

All samples are to be packed so as to reach their destination in good condition and are to be so labeled as to indicate the materials represented, the name of the building or work and location for which the material is intended, and the name of the Contractor submitting the sample. To ensure consideration of samples, the Contractor is to notify the Engineer by letter that the samples have been shipped and is to properly describe the samples in the letter. In no case is the letter of notification to be enclosed with the samples.

The Contractor is to submit data and samples, or place his orders, sufficiently early to permit consideration, inspection, testing, and approval before the materials are necessary for incorporation in the work. Any delay resulting from his failure to do so is not to be used as the basis of a claim against the Owner, the Design Engineer, the Authority, or the Authority's Consulting Engineer.

When required, the Contractor is to furnish to the Engineer, in quadruplicate, sworn copies of manufacturer's shop or mill tests, or reports from independent testing laboratories relative to material data.

In accordance with the "Buy American" provision in Public Law 95-217 (Section 215 of the Public Law 92-500 as amended) N.J. Public Contracts Law 40A:11-18, and implementing EPA regulations and guidelines, the Contractor agrees that preference will be given to domestic construction material by the Contractor, subcontractor, material suppliers, and equipment suppliers in the performance of this contract.

The Contractor is to certify that the purchased products and materials are in accordance with the above referenced "Buy American" clause and, in addition, is to provide all information required to justify the use of any foreign made product.

501.10.3 Cutting and Patching

The Contractor is to do all necessary cutting and patching of the work that may be required to properly receive the work of the various trades or as may be required by the Specifications to complete the structures. He is to restore all such cut or patched work to a condition, which receives the approval of the Engineer. Cutting of structures that may endanger the work, adjacent property, workers or the public is not to be done.

501.10.4 Delivery and Storage

The Contractor is to deliver equipment and materials to the site and store them in original containers suitably sheltered from the elements, but readily accessible for inspection until installed. He is to store all items subject to moisture damage (such as controls and electrical equipment) in dry, heated spaces. All excavated materials, construction equipment and materials to be incorporated in the new work are to be so placed as not to damage the work and so placed that free access may be had at any time to all parts of the work and to all public utility installations in the vicinity of the work. If insufficient area is available, the Contractor is to provide off-site areas at his own expense. Materials are to be kept neatly piled and compacted and conveniently stored so as to inconvenience, as little as possible, public travel and adjoining tenants.

501.10.5 Service of Manufacturer's Representatives

The Contractor is to provide the services of a skilled and experienced representative of each manufacturer supplying equipment under this Contract, for such periods as, are satisfactory to the Engineer, are essential for the proper and satisfactory installation and testing of the equipment, and training of the Owner's personnel in its use. In certain instances, particular specification sections may indicate the minimum number of visits and/or hours required to comply with the intent of the specifications regarding services of manufacturer's representatives.

501.10.6 General Mechanical Design

All equipment is to be adequately designed for the work to be done and the loads to be sustained, and is to be proportioned for ample stability and rigidity. Design is to be neat and is to provide necessary clearances for erection, repairs and adjustment. Best modern practice is to be followed in all respects.

Design of similar units is to be such that they present a uniform appearance and be similar in operation. Fittings and fixtures on the units are to be of the same make wherever possible. Parts are to be interchangeable wherever feasible.

501.10.7 Housings and Guards

All exposed moving parts are to be covered by neatly detailed sheet metal housing or guards of approved thickness and design. Housings are to be as compact as possible, and are to be detailed to be readily removable and to allow convenient lubrication. Housings, unless otherwise specified, are to be not less than 14 gauge, and complete with all necessary bracing. Bracing preferably is to be on the inside of the housing. All housings and guards are to be in compliance with the latest Occupational and Safety Health Act regulations.

All equipment requiring the changing of fluid lubricants is to be provided with drain cocks and necessary piping to permit the draining of lubricants into a container.

Drip pans and splash plates are to be furnished where required, to prevent unsanitary or unsightly conditions. All such pans and plates are to be neatly detailed and accessible for cleaning. All housing, guards, drip pans, and splash plates are to be of aluminum or stainless steel.

501.10.8 Grease Fittings

The Contractor is to ensure that all grease fittings on each piece of equipment furnished under the Contract are standardized so that only the "Alemite" button head type of fitting is utilized. Fittings are to be standard or giant size according to the type of service performed.

501.10.9 Templates and Foundation Bolts

In order to insure the proper setting of all foundation bolts or fastenings, the Contractor is to furnish all templates for the equipment or fastenings, and furnish and set all bolts, guides, and fastenings required for the installation of the equipment at such times as the progress of the Contract work requires. All anchor bolts and nuts shall be of stainless steel.

If bolts or fastenings must be reset, or if drilling is required in the final installation, such work is to be done without further payment than is included in the lump sum price bid for the work of this Contract.

501.11 Special Conditions

501.11.1 General

The Contractor is to review the Specifications to determine the extent of the work. The Contractor is specifically alerted to this section concerning inspection of the existing field conditions. The Contractor is to visit and inspect the project prior to preparing his bid in order to clearly familiarize himself with all field conditions, and the extent of all work. After his review and inspection is complete, and before he submits his bid, if the Contractor has any questions regarding the extent and details of the work, he is to submit them to the Engineer in writing.

Before proceeding with any work, the Contractor is to confirm methods of construction and obtain field measurements as required.

Failure of the Contractor to familiarize himself with all conditions existing at the site of construction will not relieve him of his obligation to furnish all material and labor necessary to carry out the provisions of the Standard Specifications and to complete the contemplated work.

The Contractor is cautioned that existing utilities are to be kept in operation during the project unless otherwise approved by the Authority or utility owner.

The Contractor is alerted to the fact that the Authority assumes no responsibility for actual conditions of the areas affected by work indicated or called for by the Contract Documents.

501.11.2 Construction Sequence

The Contractor shall undertake work under this Contract only in accordance with the following sequence of construction activities. This sequence may be modified as required by the Engineer or Authority, but the Contractor shall not depart from the sequence indicated below without prior written permission from the Engineer or Authority to do so. Construction sequence follows below:

1. Mobilization.

2. Installation of erosion control measures.

3. Installation of traffic control devices in approved work areas.

4. Installation of water and/or sewer utilities and related appurtenances, backfilling and temporary pavement.

5. Testing and acceptance of pipelines and related appurtenances.

6. Restoration of unpaved areas at regular intervals as approved by the City of Engineer.

7. Final pavement restoration.

501.11.3 Asbestos-Containing Material and Hazardous Material

The Contractor shall not supply, provide or bring onto the construction site any asbestos containing material or hazardous material (either in kind, as a component of equipment to be used or furnished under the Contract, or as a component of another material to be used or furnished under the Contract) without the express advance, written consent of the Owner. The term, "hazardous material" shall have the meaning ascribed in Federal Standard No. 313B in effect on the date of the Contract.

The Contractor shall submit to the Authority and the Owner (with a copy to the Engineers) a Material Safety Data Sheet (Department of Labor Form OSHA-20) together with a complete written description of the intended usage for any such material for which the Owner's consent is required, at least thirty (30) days before the delivery of such material.

Such consent shall not be given if materials or equipment not containing asbestos or hazardous material are available, and the Contractor shall not be entitled to any adjustment in time or compensation for providing non-asbestos-containing and non-hazardous materials.

502.0 SITE WORK AND RESTORATION

Site and access clearing shall consist of all materials, labor and equipment necessary to complete the work of clearing the site of the Project within the limits of the construction site, or hereinafter specified, including the removal of trees, grubbing and pruning, shrubs, and stripping and stockpiling topsoil.

The Contractor shall also furnish all labor, materials and equipment required to control within reasonable limits, soil erosion resulting from construction operations and prevent excessive flow of sediment from the construction site. Such work shall include, but not be limited to the installation of water diversion structures, diversion ditches, sediment basins, snow fencing, silt fencing, seeding, mulching, matting or sodding Critical Areas to provide temporary protection.

502.1 Site and Access Clearing

Prior to commencing of the project the Contractor shall determine, and if necessary obtain, a tree permit per Chapter 14 of City Ordinance. Only that portion of the project area which is absolutely necessary and essential for the completion of the contract and which has been approved by the Design Engineer shall be cleared for construction. The ground surface shall be cleared of all trees, brush, weeds, roots, matted leaves, debris and other unsuitable matter, except as otherwise hereinafter provided. Tree stumps shall be grubbed out.

Straggling roots should be pruned. Trees, which must be pruned shall be cut cleanly and painted with tree paint. If the tree is damaged, the wood shall be repaired and painted with an approved material.

It is intended to protect and save trees from removal wherever possible. Where methods of construction or minor relocation will avoid tree removal such methods will be employed without additional compensation. Trees outside of the project area shall in no case be disturbed, and approved boxing shall be provided as may be required to protect trees adjacent to the project.

Trees, shrubs and other landscape features within the limits of the construction, which do not interfere with the Project shall not be removed, but shall be protected during the progress of the work in a manner satisfactory to the Engineer.

The Contractor shall be responsible for the preservation of all existing trees, plants and other vegetation that are to remain within or adjacent to the construction site and shall use every precaution necessary to prevent damage or injury thereto. The Contractor shall give special attention to the protection of the natural vegetation and other existing landscape features and surroundings. The Contractor shall repair all injuries to bark, trunk, limbs, and roots or remaining vegetation by properly dressing, cutting, bracing and painting, using only approved tree surgery methods, tools and materials.

The removal and disposal of elm trees in all counties of the state are subject to provisions of State laws and to regulations of the State Department of Agriculture. Before removing any elm trees, the Contractor shall consult the Plant Pathologist of said Department and shall comply with his instructions relating to the removal of elm trees and the marking segregation and disposal of elm wood. The Contractor shall submit to the said Plant Pathologist an "Application for Instructions for Disposal of Encountered Elm Wood."

Materials accumulated by clearing, grubbing and pruning as above described shall be disposed of by the Contractor at sites to be provided by him outside of the work. No burial of materials shall be permitted.

After interfering vegetation has been removed, the Contractor shall strip any and all topsoil from the area to be excavated and stockpile it for future use as specified elsewhere utilizing these specifications. Stripped topsoil shall not be intermixed with other excavated material. Stockpiles in all areas shall be protected during construction.

502.2 Erosion Control

Erosion control procedures, inclusive of mulching, shall be utilized in all project areas. Erosion control measures shall be taken, as required, starting immediately after site and access clearing, continuing during sewer construction, site demolition, and until the site has been satisfactorily restored.

The Contractor shall continuously control erosion during construction. Critical Areas shall be protected at all times by temporary seeding, mulching, or sodding, or the slope lengths shall be reduced by the installation of diversions or other means. Where topography permits, debris basins shall be constructed at points of water concentration from Critical Areas. Earth berms or diversions shall be constructed to intercept and divert runoff water away from Critical Areas. Diversion outlets shall be stabilized by paving or other means acceptable to the Engineer, if required.

Structures proposed for erosion control shall be designed by the Contractor and approved by the Engineer and constructed in accordance with the Engineering Practice Standards for diversions, waterways, and debris basins as defined by "Standards for Soil Erosion and Sediment Control in New Jersey," prepared by the New Jersey State Soil Conservation Committee.

In Critical areas, particularly along steep slopes and wetlands, site clearing shall be delayed until absolutely necessary for the continuation of construction.

502.3 Sediment Control

Sediment shall be settled or filtered out of all surface or subsurface water encountered during construction before such water enters any surface waters. Dewatering operations shall direct pumpage as far from stream banks as possible. Care should be

taken not to damage or kill vegetation by excessive watering or silt accumulation in the discharge area. Settling basins or sediment traps shall be constructed and used where necessary to protect vegetation and to achieve environmental objectives.

Construction staging areas, and areas for stockpiling material, shall be selected so as to be consistent with environmental objectives and constraints. All such areas shall be located so as to avoid erosion and siltation. Locations of staging areas used for stockpiling shall be approved by the Owner and modified as required by other authorities.

502.4 General

After the trench or project area has been backfilled, and properly graded, the area shall be prepared immediately for restoration of vegetation. Erosion control measures shall be utilized as required and final restoration shall be undertaken as soon as an area is no longer needed for construction, stockpile, or access. Excavated stones and boulders too large to be incorporated in backfilling shall be removed from the construction site. Excess soil in the area shall be graded or removed. When construction access roads are no longer needed, road fill shall be removed and the access area shall be restored according to the specifications contained herein. Care should be taken to avoid damage to adjacent vegetation and to prevent the formation of depressions that would form ponds of stagnant water.

502.5 Grading

Contractor shall rough grade areas disturbed by construction to a uniform finish which will form the bases for terraces, banks, lawns, and paved areas. Areas to be paved shall be graded to depth required for placing of sub-base and paving materials. Areas to be top soiled and seeded shall be graded to 6-inches below indicated finish contour elevations as shown on contract drawings. Contractor shall provide additional approved grading material if required to meet proposed grades.

502.6 Restoration

Environmental restoration shall consist of permanent replacement of vegetation over the entire area cleared for construction. The restoration shall be accomplished by one or more of the methods described within the various subdivisions of this Item. The restoration shall be permanent in all respects.

Permanent restoration of vegetation cover shall commence as soon as practical after backfill so that completion of restoration work will follow backfilling by a maximum of 10 calendar days. Time extension beyond the 10-day requirement may be requested in writing for specific areas or sections of the alignment. Approval of any such extensions shall be based on the potential of the particular area to present adverse environmental results if left barren over the extended period.

502.7 Topsoiling, Fertilizing, and Seeding

Topsoiling, fertilizing and seeding shall include all labor equipment and materials necessary for preparing topsoil stripped and stockpiled on the site for use as topsoil and placing it, furnishing and placing topsoil required in excess of that obtained from stripping, furnishing and placing seed mixtures and grain seed, fertilizer, ground limestone and any other materials specified herein. The Contractor shall restore the site under this item when existing lawns, parks or otherwise improved grass areas are disturbed during construction.

502.8 Topsoil

The topsoil shall be spread over the surface in a uniform 6-inch minimum layer. Ground limestone shall be added where necessary to produce a soil Ph of 6.5 in the upper 3-inches of topsoil. All stone, roots, debris and other unsuitable material shall be raked out. 10-20-10 commercial designated fertilizer shall be applied at the rate of 500 pounds per acre. All topsoil acquired from off-site locations shall be best quality screened topsoil of a similar color and texture as the existing topsoil and shall as minimum conform to Ph and organic content as required by the NJDOT Standard Specifications for Road and Bridge Construction, 1989 or latest edition.

502.9 Seeding Improved Areas

The seed mixture shall be sown at the rate of 100 pounds per acre together with rye or oat grain at the rate of 10 pounds per acre. Where slopes are greater than 2:1, rye or oat grain shall be used at the rate of 25 pounds per acre. When seeding in the spring, oats shall be used and in the fall, rye. On extremely steep slopes, the Engineer may order the addition of other seeds to the mixture.

No permanent seeding shall be done when the soil is wet or frozen.

A satisfactory stand of grass shall be established on all areas. All areas where a satisfactory stand of grass is not produced shall be re-fertilized and reseeded until a satisfactory stand is produced, with no additional payment.

Grass seed mixture shall be as follows:

	Seed	Minimum Purity %	% of Total Minimum Weight of Germination Mixture
Kentucky Blue Grass	85	75	20
Red Fescues	95	80	35
Kentucky 31	95	80	20
Redtop	92	85	10
Perennial Ryegrass	98	95	10
White Clover	97	90	5

The Contractor shall be required to water the seeded areas as necessary to produce a thick growth.

502.10 Seeding Unimproved Areas

The seed in unimproved areas shall be perennial rye sown at the rate of 100 pounds per acre. A thick stand of grass shall be established on all areas, and if a satisfactory stand is not produced after the initial seeding, the area shall be reseeded until a satisfactory stand is developed.

No seeding shall be done when the soil is wet or frozen.

Grass shall be watered if necessary to provide a satisfactory growth. Slope restoration shall be in accordance with other sections of these specifications.

502.11 Slope Restoration

Slope boards shall be used where necessary to hold topsoil on steep slopes. Satisfactory placement of topsoil on all construction areas is the responsibility of the Contractor and no additional payment for slope boards shall be made. Hay bales shall be placed at the base of the slope prior to ground disturbance. Steep slopes that have been disturbed, if not sodded, shall be seeded and mulched immediately after construction is complete.

502.12 Mulching

Mulching shall include all labor, materials and equipment necessary for the furnishing, spreading and binding of hay and salt hay on areas that have been seeded.

All designated seeded areas shall be mulched with hay uniformly spread in a layer 1 to 1-1/2 inches thick, loose measurement. Hay shall be blown on in its natural length. Chopped hay shall not be used. No designated seeded areas shall remain un-mulched longer than seven (7) days.

All mulch shall be bound in place with one application of binder applied at a temperature of 145EF to 155EF. After the hay mulch has been spread, the binder shall be applied at a rate of 0.04 gallons per square yard on slopes of less than 10% and a rate of 0.075 gallons per square yard over the entire area of slopes of 10% or steeper. The use of asphaltic mulch binders is prohibited.

If any mulch is displaced before the grass has made a growth of 1-1/2 inches, it shall be replaced and rebound without additional compensation.

502.13 Matting for Slope Stabilization & Restoration

The Contractor shall provide all labor, materials and equipment for the installation of matting for soil stabilization and restoration.

Jute mat shall be cloth of a uniform plain weave of un-dyed and unbleached single jute yarn, 48 inches in width plus or minus 1 inch and weighing an average of 1.2 pounds per linear yard of cloth with a tolerance of plus or minus 5 percent, with approximately 78 warp ends per width of cloth and 41 weft ends per linear yard of cloth. The yarn shall be of a loosely twisted construction having an average twist of not less than 1.6 turns per inch and shall not vary in thickness by more than one half of its normal diameter.

Excelsior mat shall be wood excelsior, 48 inches in width plus or minus 1 inch and weighing 0.8 pounds per square yard plus or minus 10 percent. The excelsior material shall be covered with a netting to facilitate handling and to increase strength.

Staples for anchoring soil stabilization matting shall be made of 12-to-20 inch lengths of No. 8 plain iron wire.

Shape and grade the area to be protected as required by the Contract Plans and Specifications. In general all areas shall be returned to the grades which existed prior to construction unless otherwise ordered by the Engineer. Remove rocks, clods over 1-1/2 inches in diameter, sticks and other material that will prevent contact of the matting with the soil surface.

Lime, fertilizer and/or seed in accordance with the applicable seeding standard except that for jute matting one half of the seed may be applied prior to laying the matting and the remaining seed applied after laying the matting.

Matting shall be laid from the top of the slope and unrolled downgrade so that the strip extends 12 inches past the toe of slope or to un-cleared land. For jute matting, allow at least a 2-inch overlap at all joints. Excelsior matting may be butted.

Bury the top end of jute strips in a trench 4 inches or deeper and tamp the trench full of soil. Reinforce with a row of staples driven through the jute 4 inches downhill from the trench. These staples should be 10 inches apart. Staple the overlap at all joints with staples three feet part. Closer stapling along the edges is required where concentrated water may flow down the slope. Edges of excelsior matting shall be stapled on 12-inch centers.

At any point, jute matting may be folded for burying in slit trenches and secured as were the upper ends. This checks water flow and erosion that may begin under the matting and improves tie-down. This procedure is required on the steeper slopes in sandy soil and gentler slopes subject to seepage.

Where diversion channels are constructed, the channel shall be protected with matting used in the same manner as on slopes.

Contact between matting and soil shall be obtained by rolling after laying stapling and seeding are complete. Complete contact is vital to keep water flow over, not under, the matting.

503.0 EXCAVATION AND BACKFILL

503.1 Character of Material

Any and all fill imported to the site shall be certified as clean fill. An original copy of such certification, and/or laboratory analysis reports, must be provided to the Authority prior to the material being brought to the site.

503.2 Excavations, Clearances and Trimming

Excavations shall be of sufficient width to permit work to be done competently, in the manner and of the size specified and shown, and limits shall be such as to permit the use of outside forms, unless permission for an alternate procedure is specifically granted. In no case shall excavations be carried below grade by machine and backfill used to bring the grade to the proper elevation for bottom slabs, footings or pipelines.

In all excavations for pipe, boulders, rock, masonry, or other similar materials shall be excavated to a level at least six inches below the invert of the pipe, and carefully refilled with 3/4 inch stone or other approved material. Rock or boulders shall be removed from sides of trenches to a plane 12 inches beyond the outside wall of the pipe, manholes, etc., unless permission to do otherwise is expressly given.

The trench width just above the top of the pipe shall be maintained as narrow as possible and in general shall not exceed the outside diameter of pipe plus two (2) feet.

503.3 Unauthorized Excavation

If any excavation is caused by the Contractor's error, or wherever the excavation is carried beyond or below the lines and grade given by the Engineer, the Contractor shall, at his own expense, refill all such excavated space with such material and in such manner as may be directed, in order to insure the stability of the various structures. Beneath all structures, the space excavated without Engineer shall be refilled with 4,000 lb. concrete.

503.4 Sheeting and Bracing

Where necessary, particularly to prevent disturbance, damage, or settlement of adjacent structures, pipelines, utilities, improvements, or paving, excavation shall be adequately sheeted and braced. In areas where excavations exceed five (5) feet in depth, the Contractor shall assume full responsibility for the design and installation of sheeting and bracing of excavations such that the sheeting and bracing design meets all the latest requirements of the New Jersey Construction Safety Code and the Federal Occupational Safety and Health Act.

Sheeting and bracing shall be furnished and installed, and if ordered by the Engineer, left permanently in place. If sheeting is not ordered to be left in place it shall be removed.

All permanent steel sheet piling and accessories shall be new and conform to the requirements of ASTM A6-99, "Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling". All steel sheet piling shall be interlocking steel sheeting as shown on Contract Drawings and conform to the ASTM Designation A572-99a, "Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel" (GR 50).

All payment for furnishing, and placing permanent new sheet piling and bracing or other excavation protection which is specified in the Specifications, to be left in place and not removed, are included under the lump sum bid for this project and not considered Extra Work. All permanent sheeting shall be cutoff to the lines and grades as required.

All payments for furnishing, placing and removing sheeting and bracing, for use of trench boxes or other excavation protection, are included under the prices bid.

503.5 Removal of Water and Protection from Flooding

The Contractor shall remove all water from the excavation promptly and continuously throughout the progress of the work and shall keep the excavation dry at all times by approved methods such as sumps, under-drains, or well points, until the structures to be built therein are completed. Pumping shall be continuous where ordered by the Engineer to protect the work and/or to maintain satisfactory progress. If the removal of water impairs water wells it is the Contractors responsibility to provide an alternate source of potable water until recovery of the well. Should the anticipated or actual volume of water pumped during dewatering exceed 3 million gallons per month, the Contractor shall be responsible for obtaining a water diversion permit from NJDEP.

Precautions shall be taken to protect uncompleted work from flooding during storms or from other causes. All pipelines or structures not stable against uplift during construction or prior to completion shall be thoroughly braced or otherwise protected.

All necessary precautions shall be taken to prevent disturbance of and to properly drain the areas upon which concrete is to be poured, and upon which pipe is to be laid.

Contractor's plant and equipment shall be adequate to keep all concrete work dry until properly set.

503.6 Topsoil

In unpaved area(s), all topsoil shall be stripped and stockpiled and replaced. No topsoil shall be removed from the job site, but shall be stockpiled in the vicinity of the area

from which it is removed. Topsoil shall be replaced in the location and to the depth from which it was removed.

503.7 Compacting Foundation

Wherever the development of suitable foundation conditions requires it, the contractor shall take the proper means of compacting such foundation material. After excavation to grade, the surface shall be tamped, or otherwise consolidated to adequately prepare the bottom for the loads to come upon it, the method depending upon the quality and condition of the material. Where so required to stabilize the surface, screened gravel shall be placed on the surface and shall be compacted into the sub-grade in such thickness as may be required by the Engineer.

503.8 Additional Excavation

Wherever, in the opinion of the Engineer, the material found at the grades for the slabs, wall footings, or pipe inverts, is not satisfactory, the Contractor shall make any additional excavations as directed by the Engineer, and shall refill the same to two inches above the required grade with selected material.

503.9 Backfilling

As soon as practicable, after the pipe or masonry has been placed and the masonry has acquired a suitable degree of hardness, the backfilling shall begin and shall thereafter be prosecuted expeditiously.

All lumber, rubbish, and braces shall be carefully removed from behind walls or other structures, unless ordered left in place by the Engineer. Backfill under the pipe haunches, around the pipe, and up to a cover of at least 18 inches over the top of the pipe shall be placed by hand in 6-inch layers, each layer to be thoroughly compacted by mechanical tampers of an approved type.

All other backfill shall be compacted and tamped in maximum 6 inch to 12-inch lifts to obtain 90 to 95% of relative density. Smaller lifts shall be compacted if 90 to 95% of relative density is not obtained compacting 6 inch to 12-inch lifts. No heavy stones or boulders shall be allowed to drop in the trench.

All excavated soil within roadways and other paved areas shall be replaced with quarry process NJDOT I-5 stone. Backfill between a plane 18 inches above the top of the pipe and the finished surface grade shall be placed in successive layers of not over 6 inches compacted thickness. Each layer shall be thoroughly compacted using approved tamping machines.

In rights-of-way, easements, and paper streets, backfill between a plane 18 inches above the top of the pipe and the finished surface grade, the Contractor shall keep settlement to a minimum and shall promptly restore to proper grade any settlement that

might occur. Backfill in this zone shall be placed in successive layers of not over two (2) feet compacted thickness, or as directed by the Engineer. Each layer shall be thoroughly compacted using approved tamping machines.

All excavated material outside the roadways i.e., easements, shall be stockpiled at the site, outside the roadway. The stockpiled materials shall not interfere with vehicular, bicycle or pedestrian traffic, interfere with drainage or cause sight distance problems for vehicular bicycle or pedestrian traffic.

The trench outside the roadway shall be backfilled with only acceptable excavated material. Where in the opinion of the Engineer the excavated material is unsuitable for backfilling the excavated material shall be disposed of at approved off site locations and the trench backfilled with sub-base material Type I-5 as directed by the Engineer.

All backfill in embankments shall be thoroughly compacted by rollers of approved size and weight or by other approved methods.

503.10 Disposal of Material

Only excavated material acceptable to the Engineer shall be disposed of in backfilling, outside roadways, i.e. easements and to the lines and grades established by the Design Engineer. All other excess material and all material within roadways shall be disposed of by the Contractor in approved locations outside of the working areas.

Temporary storage of excavated material shall not be on environmentally sensitive areas. Also excess fill shall not be used for the top 6 inches of topsoil.

The contractor shall restore all grades to those elevations existing, prior to construction. The Contractor shall be responsible for removal and disposal of all excess excavated material. Approval by the City Engineer must be obtained prior to disposal of excess excavated material to sites within the City.

Prior to disposal of excess material, the Contractor shall notify and obtain approval from the City of Bayonne regarding the location of the disposal site. All permits, surveys, etc., required for disposal of material, by the City of Bayonne, State of New Jersey, or any other agency shall be obtained by the contractor. Under no circumstances shall material be disposed of in flood plain, wetlands, or any other environmentally sensitive area.

503.11 Solid Waste Disposal

The Contractor is directed to Public Law NJAC 7:26-1 et seq. Rules of the Bureau of Solid Waste Management, 1974. In general, this law requires that all solid wastes (concrete, black top, demolition or construction debris, etc.) must be disposed in an approved, licensed landfill site. Also, any truck hauling this type of material to a landfill must have a permit issued by the Bureau of Solid Waste Management.

503.12 Temporary Bridges and Crossings

The Contractor shall, where required to expedite the work, or where required to maintain traffic, or where otherwise ordered by the Engineer, construct temporary bridges, or walkways, of adequate sized members to safely carry the loads which may reasonably be anticipated, and the sizes of the members used shall meet with the approval of the Engineer.

Temporary bridges shall be removed when they are no longer needed and the area shall be restored. Erosion and sediment control procedures are to be included as described in the specifications.

503.13 Protection and Restoration of Existing Structures & Pipe Lines

The contractor shall carefully protect all existing structures, both above and underground, including but not limited to poles, curbs, driveways, parking areas, privately owned pavements, signs, sumps, pits, catch basins, manholes, underground tanks, and building foundations; pipe lines, including gas mains, water mains, hydrants, drain lines, storm sewers, sanitary sewers, service connections, conduits, and miscellaneous underground pipe lines; and shall restore same to a condition equivalent to conditions existing prior to his operation.

The contractor is specifically directed to the requirements of protecting all trees along the route of the work in an approved manner.

The work of protecting and restoring existing utilities and facilities and including trees where no definite physical interference exists, or where the interference is avoidable, shall be the responsibility of the Contractor.

Ample precautions shall be taken to prevent settlement of existing improvements.

The work will be located so as to avoid interference to the greatest degree practicable, based upon data available as to depth and location of existing utilities and other existing facilities.

The Contractor shall, insofar as possible, determine in advance of excavation of trenching machines, the location of all utilities and other subsurface structures and facilities and shall accurately mark same so that they may be avoided by the machine.

Where existing utilities or other sub-surface facilities adjacent to the trench or crossing through the trench require temporary support or protection, the work shall be the responsibility of the Contractor.

Where definite physical interference would be unavoidable in the final work and necessitates the removal, alteration, replacement or extension of existing utilities, the

Contractor shall make all excavations for such work and shall cooperated with other forces engaged in the work.

The labor, pipe and other material necessary for removing, altering, replacing, or extending such utilities, other than for excavation, will, unless otherwise ordered, be coordinated by the Contractor with the respective utility companies or other owners involved. In specific cases, the Contractor may be ordered to perform such work unless otherwise completed by the utility.

The Contractor shall be responsible for protecting all existing Bayonne Municipal Utilities Engineer (BMUA) appurtenances including, but not limited to catch basin inlets, sanitary/combined/storm manhole covers, and water valve boxes or manhole covers hereafter referred to as utility castings. The Contractor shall accurately mark out the location of all utility casings in advance of milling of the roadway. Care shall be exercised during the milling/paving operations to avoid damage to the utility castings by the milling/paving machines. Following the milling operation and prior to pavement, the Contractor shall inspect all utility castings within the roadway to assure that they were not hit and displaced during the milling activity and that no millings have entered the utility castings. The Contractor shall be responsible for removing any and all millings from the valve box or other utility castings and shall assure that complete and clear access is available to all valves and other utility appurtenances. In addition, the Contractor shall remove and reinstall/replace to the satisfaction of the BMUA all utility castings which have been dislodged by the milling or paving operations.

The Contractor shall also be responsible for raising all utility castings located in the roadway to the proposed finished grade in areas where the roadway is scheduled for additional pavement above the existing rim elevations. The work and materials associated with altering, replacing or extending such utility castings shall be the sole responsibility of the contractor and shall be coordinated by the Contractor with the Bayonne Municipal Utilities Engineer prior to the work being undertaken.

The BMUA shall be contacted within 48 hours of final paving to schedule an inspection of all the utility castings within the project area to assure compliance with this specification. All utility castings determined to have been buried, damaged, moved or in any other way affected by the project shall be reinstalled, replaced or uncovered to the satisfaction of the BMUA within two weeks of notification by the MUA.

503.14 Removal and Restoration of Pavement, Curbing, and Sidewalks

All sidewalks, curbs, lawns, private driveways, pavements, drainage swales, and other improvements damaged or removed due to the Contractor's operations shall be restored to a condition at least equivalent to conditions existing prior to the Contractor's operations. Replacement or restoration shall be done in accordance with applicable provisions of this specification and in conformity with the requirements of the authorities in charge; all work to be done to the satisfaction of the Engineer. Work on

City, County or NJDOT roadways shall be conducted in accordance with City, County or NJDOT requirements and details.

Temporary Pavement

Pavement restoration in City right-of-ways shall be started immediately after trenches have been backfilled. The Contractor shall place a six (6) inch thick layer of compacted bituminous stabilized base (Mix I-2) in two courses. The surface of the bituminous stabilized base course shall be flush with the existing pavement. This base shall be maintained in place and in a usable condition by placement of additional bituminous stabilized base as required for settlement, wear or erosion, with no additional payment.

Permanent Pavement

Permanent surface pavement in City right-of-ways shall be installed after the base pavement has been in place and maintained by the Contractor for a period of not less than two (2) months. This period may be shortened by a written directive from the Engineer.

Permanent surface pavement replacement shall consist of a compacted two (2) inch course of FABC (Mix I-5). Prior to installing the final pavement, the entire trench area shall be proof rolled to locate soft areas and bridging, with a single axle truck carrying a load of 10 tons or more. All existing pavement edges shall be saw cut back evenly along a neat line so as to provide an undisturbed shoulder of twelve (12) inches along both sides of the excavation.

The base pavement shall be removed to a depth of two inches. Prior to the application of the finished (permanent) surface course, the edge of the existing pavement shall be coated with a tack coat of cutback asphalt. Said tack coat shall also cover the surface of the remaining base pavement so as to produce a bond between the stabilized base course and the permanent surface course. The completed pavements shall be neat and have straight edges.

The Contractor shall maintain the permanent surface course until the completion of the maintenance period. Any sections of the trench which settle shall be properly restored to required final grade. Any sections which are defective shall be cut out completely and the sub-base reconstructed and the pavement replaced as hereinbefore specified.

Concrete Sidewalk

The Contractor shall remove sidewalk as required for construction at existing expansion joints. Should no expansion joint exist within a distance of 10 feet on either side of the construction area, the contractor shall saw cut existing sidewalk and remove the existing sidewalk in a neat and workmanlike manner. It is the contractor's responsibility to protect all sidewalks not removed for the duration of the construction

period. Concrete sidewalks shall be reconstructed in accordance with the City of Bayonne's requirements.

Bituminous Sidewalk

The contractor shall saw cut the existing sidewalk and remove the existing sidewalk within the construction area in a neat and workmanlike manner. It is the contractor's responsibility to protect all sidewalks not removed for the duration of the construction period. Bituminous sidewalk shall be reconstructed in accordance with the City of Bayonne's requirements or as directed by the Engineer.

Curbing

Curb shall be removed at the existing expansion joint. Should no joints exist within 10 feet of either side of the construction area, the contractor shall saw cut the existing curb and remove the curb in a neat and workmanlike manner. All curb not removed must be protected from damage during the course of the project. All curb removed or damaged during construction shall be reconstructed in accordance with the City of Bayonne's requirements.

All sidewalks and pavements, including pavements on roads, shall be maintained during the period of trench consolidation, and the contractor shall be expected to keep his trench adequately protected at all times. Pavement cutters shall be used prior to excavation to reduce the pavement disturbance to a minimum.

503.15 Trench Maintenance

The Contractor shall use barricades, lights and adequate signs to indicate that the trench is soft and upon settling of the trench shall immediately bring the trench up to the required grade. Where the trench has reached some degree of consolidation and may be used for vehicular traffic, the Contractor shall fill in any holes or ruts which may occur (prior to placement of temporary pavement) with crushed stone to maintain a safe and satisfactory condition at all times.

503.16 Work in Private Easements

Where the work is in easements located within privately owned areas, rear yards, etc., the Contractor shall make every effort to minimize disturbance to the area. All trees shall be boxed or fenced to dripline. Excavated material shall be stored on tarpaulins or other means used to prevent it from being spread on the ground. Backfill shall be completed on the same day. Topsoil shall be removed and stored separately, and upon completion of backfill shall be evenly spread over the disturbed area. If settlement occurs, the Contractor shall bring in additional topsoil of an approved variety to bring the trench up to grade.

All disturbed lawns, trees, shrubs, bushes, planting, fences, walls, driveways, walkways, etc., shall be restored to the satisfaction of the owner. It is required that the Contractor take "before and after" photographs of all such areas. Any disturbance or damage to existing structures and/or any site enhancement, shall be immediately repaired in kind by the contractor without compensation.

503.17 Methods

Methods of excavation and construction must be in accordance with the State of New Jersey, Department of Labor & Industry, Bureau of Engineering & Safety, CONSTRUCTION SAFETY CODE, and all other local, state, or federal requirements. Methods of excavation shall be as required by job conditions; in general, excavation may be done by suitable power equipment, but in cases where working room is limited or where necessary to prevent damage to existing structures, hand methods shall be used.

In cases where tunneling is adopted, either by option of the Contractor or by requirement of a utility or governmental authority having jurisdiction, and with the approval of the Authority, and in accordance with the requirements of these specifications. The Contractor shall perform work as required below.

503.18 Tunneling

Proposed methods and schedule for tunneling operations shall be submitted to the Authority for approval, and shall meet all requirements of the authority having jurisdiction. Tunneling operations shall be conducted in such a manner as to prevent settling or other damage to the roadway or other surface improvements. Shoring shall be provided and installed as required by ground conditions to prevent settling or loss of ground. Tunnel cross-sections shall be held to a minimum practicable size.

Immediately following installation and testing of the section of the pipe in the tunnel, the entire tunnel shall be solidly backfilled with a stiff sand-cement mixture containing not less than two (2) bags of cement per cubic yard of mixture. Extreme care shall be taken to insure that all voids are filled; the backfill mixture shall be rammed in place from both sides, working progressively from the center to the ends of the tunnel.

503.19 Blasting

No blasting will be permitted at locations near existing structures or near water, sewer, drain, oil, gas cable or other utilities. Where blasting is permitted, the Contractor shall take every precaution to protect all portions of the work already constructed or being constructed and shall use small charges and give ample notice so as not to endanger persons or property. Copies of local and state permits shall be provided to the Authority prior to the start of work.

Prior to blasting for rock excavation along any street, pavement shall be cut and removed. Blasting may then proceed provided all other requirements are met as specified and steel blasting mats are used to shield the blast area.

The Contractor, in addition to observing all of the requirements set forth and all municipal and, county ordinances, and State laws relative to the transportation, storage, handling and use of explosives, shall also conform to any further regulations that the Authority may deem necessary in this respect. The Contractor shall be liable for all damage to persons or property caused by blast or explosion.

Where blasting is not permitted, the rock shall be removed with air driven hammers or other methods approved by the City or Authority.

Prior to performing blasting operations the Contractor shall have complete surveys performed on all homes and structures along the sewer alignment where blasting is proposed. Written preblast surveys shall promptly be provided (in a form acceptable to the City) to the City upon completion of the survey.

The Contractor shall monitor all blasting by use of approved seismic instrumentation to ensure that frequency and peak particle velocity standards are strictly adhered to in accordance with Local and New Jersey State Standards.

503.20 Connection to Existing Manholes

Where new connections to existing manholes are required, the Contractor shall core drill a hole in the existing manhole to accept the pipe and a flexible gasket around the pipe with stainless steel appurtenances to hold the gasket in place. The Contractor shall properly reconstruct the existing manhole channel and benching to accommodate the new sanitary sewer upon testing and acceptance of the sewer.

Where it is determined by the Authority to be unfeasible to core drill an existing manhole, the Contractor shall use a hammer drill to create an adequately sized opening to accept the incoming sewer at the invert specified on the plans. A waterstop as manufactured by Fernco or approved equal shall be provided on the clean end of the new pipe. The water stop shall be positioned so that it is centered on the manhole wall. Non-shrink grout shall be placed around the waterstop to fill the voids between the manhole walls and the waterstop. The non-shrink grout shall be Five Star Structural Concrete, or approved equal. Prior to placement of the grout, the manhole surface shall be roughened to facilitate adherence of the grout.

503.21 Abandonment of Existing Sewers or Water Mains

Where deemed necessary and approved by the Authority in the approved plans and specifications, the Contractor shall undertake the abandonment of existing sewers or water mains. The abandonment of existing sewers and water mains must be coordinated with the Authority and must be approved by the system operator. The cast

iron frames, covers and castings on all manholes and drain inlets or water appurtenances to be abandoned shall be removed and transported to the Bayonne Municipal Utilities Authority Oak Street Pumping Station, or as designated by the Authority for future use.

The downstream end of the existing sewer to be abandoned shall be plugged with concrete or capped with a mechanical plug. All structures within a minimum distance of 12-inches from existing grade shall be demolished and removed. All sewers, manholes and drain inlets to be abandoned shall then be filled with pea gravel or sand and capped with a minimum of 4-inches of concrete. The upstream end of the pipes shall then be capped or plugged and the ground surfaces adjacent to all inlets or manholes shall be restored to their original condition.

504.0 BROKEN STONE OR SCREENED GRAVEL FOUNDATION

Broken stone or screened gravel shall be clean, hard aggregate as approved by the Engineer; shall be accurately leveled to required grades, and where required shall be compacted by tamping or other approved means.

In general, 3/4 inch clean broken stone or screened gravel will be required for foundation bedding and haunch purposes In special cases, where large volumes of water are encountered and the greater consolidation effects of broken stone may be considered of less importance, clean, sound screened gravel, 3/4 inch to 1-1/4 inch in size may, at the option of the Engineer, be permitted.

505.0 BACKFILL MATERIAL

505.1 Quarry Process

Where specified or required by the Authority or Engineer, the Contractor shall furnish, place and compact quarry process. Quarry process, Type I-5, N.J.D.O.T. Standard Specification, free of clay and foreign material, as approved by the Engineer; shall be accurately leveled to required grades, and shall be compacted by tamping or other approved means to the required grade.

Gradation shall be as follows;

Sieve Size	Percentage by Weight Passing Square Mesh Sieve
2"	100
3/4"	70-100
No. 4	30-80
No. 50	10-35
No. 200	5-12

505.2 Sand and Gravel

Where required by the Authority or Engineer, the Contractor shall furnish, place, and compact bank run sand and gravel. Bank run sand and gravel shall be bank run supply, Type I-3, N.J.D.O.T Standard Specification, free of clay and foreign material, as approved by the Engineer; shall be accurately leveled to required grades, and shall be compacted by tamping or other approved means to the required grade.

Gradation shall be as follows;

Sieve Size	Percentage by Weight Passing Square Mesh Sieve
4"	100
3/4"	60-100
No. 1	30-100
No. 50	5-35
No. 200	0-5

APPENDIX F

SEWER PROTOCOL

APPENDIX B

SEWER PROTOCOL

A. Investigation and Warning

1. The responsible party will investigate the sewer sites and delineate those areas of the Pipeline where Chromium Materials are present.

2. The responsible party will provide the utility with a map of those sections of sewer where Chromium Materials have been determined to be present and will fund training for utility employees on (a) recognition of Chromium Materials; (b) appropriate steps to be taken for worker protection; and (c) emergency utility repair procedures .

3. The responsible party and utility will develop administrative procedures to identify when Chromium Materials containing areas of the pipeline are scheduled for repair.

B. Remediation Protocols

1. Chromium Materials at the Surface. Whenever Chromium Materials or soils contaminated by Chromium Materials exceed the applicable standard for hexavalent chromium within the top 3 feet of soil, the presumptive remedy will consist of a capping system that includes, at a minimum, the following in vertical profile from top to bottom:

Asphalt or concrete cover,
Gravel subbase materials
Geocomposite drainage layer, e.g. geonet, as a capillary break
Linear Low Density Polyethylene (LLDP) liner
Geotextile Fabric.

2. **Chromium Materials Beneath the Surface.** Whenever Chromium Materials or soils contaminated by Chromium Materials exceed the applicable standard for hexavalent chromium at a depth of 3 feet or more below the surface, the presumptive remedy consists of a capping system that includes the top three feet of clean fill as an engineering control. In addition, an orange demarcation layer (orange snow fence) will be installed below the surface as a warning not to disturb the engineering control.

3. **Chromium Materials Beneath a Public Street or Highway.** Whenever Chromium Materials or soils contaminated by Chromium

Materials exceed the applicable standard for hexavalent chromium beneath a public street or highway, the presumptive remedy consists of a capping system that includes the street itself as an engineering control.

4. **Chromium Materials Excavation and Removal** It is understood that repair or replacement of sections of a pipeline may be required from time to time to maintain efficient operation over the years. Whenever such normal operating repairs or replacement requires the removal of Chromium Materials or soils contaminated by chromium exceeding the applicable standard for hexavalent chromium, the responsible party will remove the Chromium Materials and/or contaminated soil.

5. **Emergency Repairs** The responsible party and the utility will develop procedures to be followed in the event of an emergency repair to any utility in an area where Chromium Materials were placed as bedding or fill around the utility. Such procedures will include: (a) appropriate steps to be taken to ensure worker safety; (b) the provision of notice to DEP and the responsible party as soon as practicable after the repair is made; (c) provisions for handling and disposal of any COPR Materials or chromium contaminated soil removed during the repair; and (d) provisions for restoring any remedial measures taken pursuant to the Sewer Protocol.

WORKER TRAINING MANUAL
FOR MANAGING CONTAMINATED SOILS AND GROUNDWATER AT THE

SITE 153 FORMER MORRIS CANAL

AND

NEW JERSEY CITY UNIVERSITY
WEST CAMPUS
COMMERCIAL AREA OF CONCERN

JERSEY CITY, NEW JERSEY

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This Worker Training Manual is hereby approved by the following parties and each agrees to abide by the obligations placed upon them by this Worker Training Manual:

John J. Moniz — 1/4/17

Honeywell - Global Remediation Director — Date

Bayonne Municipal Utilities Authority - Director — Date

New Jersey City University — Date

~~Director of Campus Planning~~
~~Facilities and Construction Management~~
Vice President for Administration and Finance 1/17/2017

Alicia C. Alcorn, counsel for plaintiffs — Date
Hackensack Riverkeeper, Inc.,
William Sheehan, Lawrence Baker,
Rev. Winston Clarke

This Worker Training Manual is hereby approved by the following parties and each agrees to abide by the obligations placed upon them by this Worker Training Manual:

Honeywell - Global Remediation Director — Date

Bayonne Municipal Utilities Authority - Director — 12.27.16 — Date

New Jersey City University — Date
~~Director of Campus Planning~~
~~Facilities and Construction Management~~
Vice President for Administration and Finance 1/17/2017

Alicia C. Alcorn, counsel for plaintiffs — Date
Hackensack Riverkeeper, Inc.,
William Sheehan, Lawrence Baker,
Rev. Winston Clarke

This Worker Training Manual is hereby approved by the following parties and each agrees to abide by the obligations placed upon them by this Worker Training Manual:

Honeywell - Global Remediation Director _____ Date _____

Bayonne Municipal Utilities Authority - Director _____ Date _____

Alfred E. Ramey Jr.
University Counsel
New Jersey City University _____ January 20, 2017
~~Director of Campus Planning~~ Date
~~Facilities and Construction Manager~~

Alicia C. Alcorn, counsel for plaintiffs _____ Date _____
Hackensack Riverkeeper, Inc.,
William Sheehan, Lawrence Baker,
Rev. Winston Clarke

This Worker Training Manual is hereby approved by the following parties and each agrees to abide by the obligations placed upon them by this Worker Training Manual:

Honeywell - Global Remediation Director _____ Date _____

Bayonne Municipal Utilities Authority - Director _____ Date _____

New Jersey City University _____ Date _____
~~Director of Campus Planning~~
~~Facilities and Construction Management~~
Vice President for
Administration and Finance J.K. 1/17/2017

Alicia C. Alcorn _____ 1/3/2017 _____

Alicia C. Alcorn, counsel for plaintiffs Date
Hackensack Riverkeeper, Inc.,
William Sheehan, Lawrence Baker,
Rev. Winston Clarke

1.0 INTRODUCTION

This Worker Training Manual (Manual) provides health and safety information applicable to workers who may have to perform subsurface work on certain sites where chromium is known to be present. There are two such sites, both in Jersey City. **Figure 1** shows their locations.

The two sites are commonly known as Site 153 Former Morris Canal (referred to by the NJDEP as Site No. 153) ("Site 153") and New Jersey City University (NJCU), West Campus, Commercial Area of Concern (referred to by the NJDEP as Sites 090/184) ("NJCU Commercial AOC"). In this document the use of the term "Sites" refers to all of Site 153 and the NJCU Commercial AOC. Portions of these Sites contain chromium ore processing residue (COPR) and/or chromium contaminated fill.



Figure 1: Site 153 and NJCU Commercial AOC

This Manual is applicable to any subsurface work performed at the Sites. It was prepared in accordance with the following two legal documents, which are collectively referred to as "Consent Decrees" in the remainder of this document.

- Consent Decree Regarding Remediation of the NJCU Redevelopment Area (including Site 153 North), Paragraph 83 (the "NJCU Consent Decree")[1] and
- Consent Decree Regarding Sites 79 and 153 South, Paragraph 72 (the "Site 153 Consent Decree").[2]

The Consent Decrees set forth the remedial measures and engineering controls that were implemented at the Sites and that make up the Chromium Remedy. The Consent Decrees govern the future use and development of the Sites, and place restrictions on such use and development. The Consent Decrees place various obligations on Honeywell, BMUA, and NJCU regarding the protection, monitoring, maintenance, repair and replacement of the Chromium Remedy. Reference to Honeywell, BMUA, NJCU, or plaintiffs shall include each party's successors, assigns, heirs, corporate parents, subsidiaries and affiliates as set forth in paragraph 152 of the NJCU Consent Decree and paragraph 98 of the Site 153 Consent Decree. For purposes of this Worker Training Manual, the provisions of this Worker Training Manual are not applicable to NJCU lessees or sub-lessees that are prohibited from conducting subsurface work in the Commercial AOC and intrusive activities that will disturb the Chromium Remedy.

On or about September 21, 2015, NJCU entered into a Ground Lease with CRT Holdings, LLC ("CRT") of property known as Block 6 of the West Campus a/k/a

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[1] This document, the "Consent Decree Regarding Remediation of the New Jersey City University Redevelopment Area," ECF No. 302, was entered by the United States District Court for the District of New Jersey on January 21, 2010, in Civil No. 05-05955, later consolidated with Civil No. 95-2097. It is available from the Court and at the following website url: http://tpmlaw.com/lawyer/More-Information-Current-RCRA-Hazardous-Waste-Cases_cp9945.htm.

[2] This document, the "Consent Decree Regarding Sites 79 and 153 South," ECF No. 301, was entered by the United States District Court for the District of New Jersey on January 21, 2010, in Civil No. 05-05955, later consolidated with Civil No. 95-2097. It is available from the Court and at the following website url: http://tpmlaw.com/lawyer/More-Information-Current-RCRA-Hazardous-Waste-Cases_cp9945.htm.

Block 21902.01, Lot 1 as shown on the Major Subdivision Plan of Block 21902 ("Block 6"). Part of Block 6 is within the Commercial AOC on the NJCU West Campus Site and thus subject to Court oversight under the NJCU Consent Decree. On the same date, NJCU also entered into a Project Development Agreement with CRT. The Ground Lease requires, among other things, that CRT develop and construct on Block 6 a building known as Building 6 and, in connection therewith, comply with the obligations of NJCU under the provisions of the Deed Notice and Consent Decree. The Project Development Agreement also requires that CRT comply with the Deed Notice and Consent Decree relating to any and all planned construction work, emergency work and/or disturbance on Block 6, performed by CRT or any of its employees, agents, servants and/or contractors with respect to the Chromium Remedy, and in connection with such work, relating to the regulatory notification process, restoration of engineering controls in the event of disturbance of the Chromium Remedy and coordination of such work with Honeywell and NJCU. And, the Project Development Agreement further requires CRT (i) to familiarize itself with the Worker Training Manual, which must be followed by its agents, servants and contractors in connection with work on the Building portions of which are in the Commercial Area of Concern and the Residential Area of Concern and (ii) to complete and execute a subsurface work authorization form for digging and excavation permit checklist before any intrusive subsurface work is performed in the Commercial Area of Concern; and (iii) to comply with and to use all reasonable and good faith efforts to cause its Contractors to comply with all of CRT's responsibilities in the Project Development Agreement described above.

NJCU shall provide to Honeywell any subsurface dig authorization form submitted by CRT and all plans provided to NJCU by CRT for all proposed construction work by CRT, or any of its employees and/or contractors for Building 6 involving proposed subsurface work or disturbance of the Chromium Remedy. Honeywell shall review and determine whether to approve all such subsurface dig authorization forms and plans for such work before it is undertaken. NJCU shall seek to enforce all of CRT's contractual obligations under the Ground Lease and Project Development Agreement relating to CRT's compliance with the Consent Decree, Deed Notice and Worker Training Manual with respect to any disturbance of the Chromium Remedy.

This manual incorporates by reference the definitions set forth in the Consent Decrees. Any reference to Honeywell, NJCU, CRT, or BMUA in this document shall

include Honeywell, NJCU, CRT, or BMUA, as the case may be, and their respective agents and contractors.

This Manual prescribes requirements applicable to any entity conducting subsurface work at the Sites, including but not limited to Honeywell, NJCU, BMUA, and easement holders and operators of any portion of the Sites, including their contractors and consultants, for (i) training and protection of workers who may be exposed to COPR, chromium-impacted soils or groundwater in conjunction with utility or other subsurface work performed at the Sites; and (ii) identifying which work may be subject to special protective measures and coordinating this work with Honeywell.

This Manual:

- Identifies health and safety requirements for workers who maintain, repair, or replace utilities or conduct other subsurface activities (e.g., digging, drilling, excavation) in areas of COPR and/or chromium contaminated fill.
- Provides a basis for worker awareness and training to inform workers of potential hazards associated with chromium-impacted media.
- Addresses identification and coordination of work with Honeywell.

The Consent Decrees also contain certain requirements specific to the BMUA. According to the Consent Decrees, the BMUA shall:

1. Develop a permanent plan to implement health and safety procedures for its workers in accordance with OSHA rules related to hazardous materials; and
2. Utilize the Worker Training Manual prepared by Honeywell setting forth the procedures and protections that BMUA shall employ when it conducts activities at Site 153.

Specifically for the BMUA, this Manual supplements a Standard Operating Procedure (SOP) for identifying and coordinating work within chromium soils, which has been developed by Honeywell in cooperation with the BMUA and its consultant engineer, CME Associates and systems operator, Suez Bayonne (formerly United Water Bayonne). The SOP addresses coordination of work between the BMUA and Honeywell in the area of the force main sewer line on Site 153 property. The

coordination covers notification, response, and handling and disposal of chromium soils in conjunction with sewer work at the Sites.

The BMUA has entered into a long-term agreement with Suez Bayonne for the operation and maintenance of its water and sewer systems. Accordingly, any reference to the BMUA in terms of operation and maintenance of their system shall be interpreted to include reference to Suez Bayonne, or any other future entity performing the operation and maintenance of the BMUA water and sewer systems, and its employees.

In addition to Honeywell, BMUA, and NJCU, other potential users of the Manual may include the following entities:

- Jersey City Municipal Utilities Authority (JCMUA);
- Public Service Electric and Gas Company (PSE&G);
- Comcast;
- Verizon;
- Other utilities and their contractors; and
- New Jersey Department of Transportation (NJDOT).

Honeywell will undertake reasonable efforts to work with these entities to urge them to comply with the contents of this Worker Training Manual to protect their workers. This effort will consist of Honeywell's contractor reviewing key sections of this document with the crew in the field, prior to the crew starting any work. In April of each year, Honeywell will provide annual notification letters to these entities in accordance with the Consent Decrees.[3] The annual notification letters will attach, or offer to provide on request, a copy of the current version of this Worker Training Manual. The annual notification letters include information on site conditions, remedial measures, engineering and institutional controls (deed notices), and instructions for contacting Honeywell prior to performing subsurface work in the area of Site 153 and NJCU Commercial Area. Annual notification letters are also provided to Jersey City Fields, LLC (owner of Site 117; located next to Site 153 and NJCU property). A separate Worker Protection Plan for Site 117,

[3] The NJCU Consent Decree, paragraph 104(e), requires NJCU to provide Honeywell with a list of tenants in any development on the NJCU Commercial AOC.

similar to this Worker Training Manual, exists for use by the property owner/operators and contractors.

It is essential that the Chromium Remedy is not compromised by utility or other subsurface work. The Chromium Remedy engineering controls are part of the NJDEP approved remedial system that protects human health and the environment. Deed notice documents contain specific requirements pertaining to notification, disturbance and repair of engineering controls, as defined in the Deed Notice. Copies of Deed Notices for Site 153 and NJCU Commercial Area are included for reference in Appendix **G**.

Honeywell has also entered into a contract with Terradex Inc. to notify Honeywell through the New Jersey One Call system whenever soil disturbing work takes place at the Sites. Notice through the Terradex LandWatch system will enable Honeywell to work with entities doing subsurface work at the Sites and inform them of the processes described in this Worker Training Manual. Honeywell will continue to use the Terradex LandWatch system to notify Honeywell of any subsurface activities on the Sites, provided Terradex is willing and able to provide this service, and provided Terradex is able to provide this service consistent with the requirements of New Jersey law.

Long Term Monitoring Plans (LTMPs) for Site 153 and NJCU Commercial AOC have been prepared in accordance with the Consent Decrees. The LTMPs contain details regarding monitoring, maintenance, notification, reporting, and contingency plan requirements. Copies of these plans have been provided to the BMUA and NJCU, and NJCU shall provide a copy to CRT. The LTMPs are reviewed annually and will be updated as needed based on changes to field conditions and/or requirements of the Worker Training Manual or other project documents for Site 153 and NJCU Commercial AOC. This Worker Training Manual will be included as an attachment to the LTMPs.

This Manual is organized into the following sections:

Section 1 – Introduction: identifies the purpose and scope of the Manual consistent with the requirements of the Consent Decrees.

Section 2 – Site Background: includes background information including previous investigations, remedial actions, engineering and institutional controls.

Section 3 – Coordination of Work: addresses coordination of work with Honeywell including removal and disposal of chromium-impacted materials in connection with utility or other subsurface work.

Section 4 – Hazard Evaluation: provides information on potential health hazards associated with chromium.

Section 5 – Health and Safety Requirements: identifies applicable health and safety requirements for workers.

2.0 SITE BACKGROUND

The section provides background information for Site 153 and NJCU West Campus Commercial AOC properties, including the Chromium Remedy. Site maps are provided in **Appendix A**.

2.1 FORMER MORRIS CANAL

Site 153 consists of a narrow strip of land (24 feet approximate width) located along the eastern side of Route 440 between Carbon Place and Danforth Avenue in Jersey City. It is adjacent to the current NJCU West Campus Property and the current Home Depot retail center. The property is designated as Block 21902, Lot 1 and contains various utility lines including a 36-inch diameter sanitary sewer force main operated by the BMUA. Honeywell purchased the property from the BMUA in August 2007, and the BMUA maintains an easement for the existing sewer line. The Site is divided into three sections designated as Site 153 North, Site 153 South Upper Segment and Site 153 South Lower Segment.

The portion of Site 153 of interest here was a small segment of the original Morris Canal, which operated from the 1860s to the early 1900s. COPR was used to fill portions of the canal during its closure between 1924 and 1935. During 1990, the City of Bayonne excavated a section of Site 153 and installed a new sewer pipeline. The BMUA force main is constructed of concrete encased PCCP (pre-stressed concrete cylinder pipe), with depths to the top of the pipeline ranging from just below the surface pavement (next to NJCU and Home Depot) to approximately 4 to 6 feet below grade (south of Home Depot). The force main conveys sewage from the City of Bayonne to the Jersey City MUA for ultimate treatment at the Passaic Valley Sewerage Commission facility in Newark. Other utilities along portions of the site include electric, gas, storm sewer, water, and telephone lines that provide service to adjacent commercial properties.

Remedial investigation work to assess the presence of chromium impacts in both soils and the groundwater has been completed. Remedial actions were completed in 2009-2011. Areas of chromium contamination in soils and groundwater and the Chromium Remedy are indicated on site maps in **Appendix A-2**. Soil sample locations and concentrations above the NJDEP soil criteria of 20 ppm for hexavalent chromium are indicated in the Deed Notice (Exhibit B) in **Appendix G-1**. The remedial actions are summarized as follows:

Adjacent to the NJCU site, remedial actions at Site 153 North included 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 in the eastern portion (east of the force main). Engineering controls east of the force main include: linear low density polyethylene (LLDPE) liner and geo-composite drainage layer; orange demarcation warning layer (geotextile); two to eighteen inches of clean granular fill; and four inches of pavement surface. The eastern perimeter of Site 153 North also has a sheet pile wall along the property boundary with NJCU. Remedial actions were coordinated with the NJCU Chromium Remedy and documented in the Remedial Action Report (RAR) for the NJCU site dated September 2012. Refer to Section 2.2 for a description of the Chromium Remedy for the NJCU Commercial Area.

Adjacent to and south of the Home Depot site, remedial actions at Site 153 South consisted primarily 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 granular fill;
- restoration of soil vegetative or asphalt cap consistent with pre-remediation surface types; and
- re-pavement or replacement of existing asphalt.

The Chromium Remedy includes a combination of clean fill/vegetative cover and asphalt pavement. Remedial actions for this portion of the property were documented in interim remedial measures reports dated October 13, 2010 and November 26, 2013. The remedial actions for the Morris Canal are also described in a combined Remedial Investigation Report/Remedial Action Work Plan/Remedial Action Report dated December 2014; revised March 2015.

The following illustrations present simplified profiles showing the Chromium Remedy and subsurface features for Site 153.

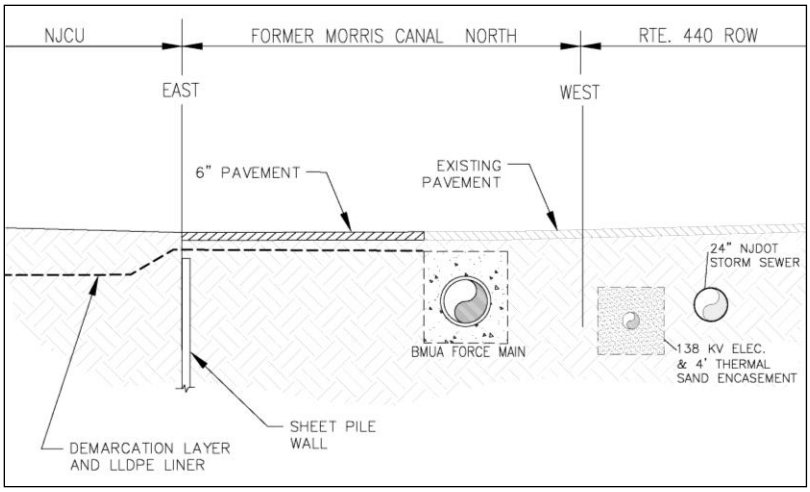


Illustration 1: Site 153 North – Cap Profile

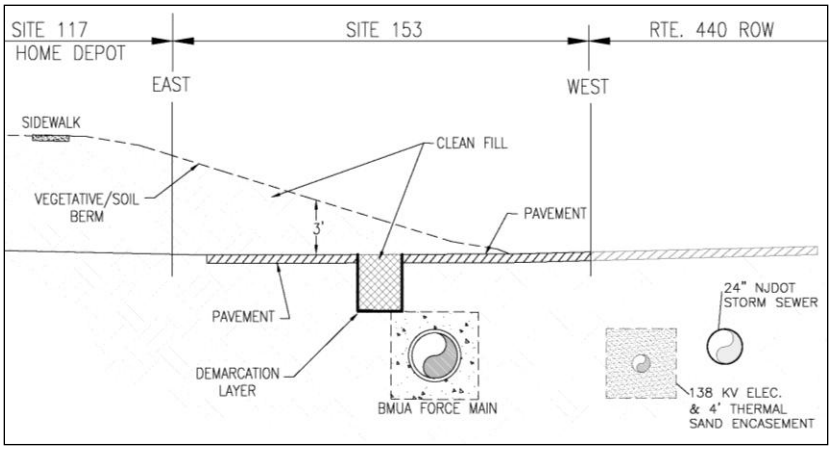


Illustration 2: Site 153 South Upper Segment – Cap Profile

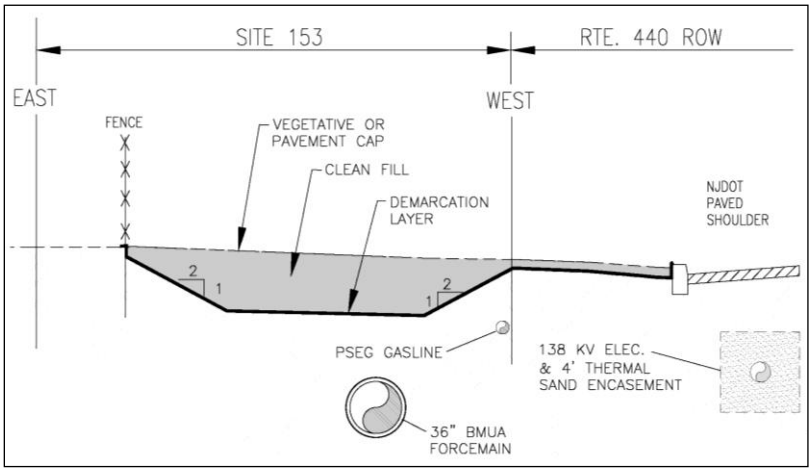


Illustration 3: Site 153 South Lower Segment – Cap Profile

In addition to the Chromium Remedy, access point warning signs were installed within sewer manholes to communicate the presence of COPR or chromium contaminated soils. Warning sign information including sign example, summary table and photos are included in **Appendix E**. Refer to **Appendix B** of this Worker Training Manual for copies of as-built figures for the remedial actions for Site 153 and the NJCU Commercial AOC. Refer to **Appendix C** of this Worker Training Manual for copies of as-built figures for the NJCU Commercial AOC redevelopment completed as of June 1, 2016. Refer to the SOP for details regarding the identification and coordination between Honeywell and the BMUA at Site 153. Refer to the LTMP for information on monitoring, maintenance and reporting requirements.

Subsurface Work Authorization Forms ("Dig Permit") have been developed for work at Site 153, and will be used in order to facilitate coordination of subsurface work at Site 153. There is one form for work by the BMUA and/or its contractors and another form for work by non-BMUA entities. For work by BMUA, the BMUA and/or its contractors will initiate completion of the form and coordinate work with Honeywell. For work by non-BMUA entities (e.g., other utilities or contractors), Honeywell will initiate completion of the form upon notification of work, and then work with the utility entity and/or its contractors and/or other contractors for coordination of work involving chromium soils or repair/restoration of the Chromium Remedy. Dig Permit Forms for work by the BMUA are included in **Appendix I-1**. Dig Permit Forms for work by non-BMUA entities are included in **Appendix I-2.** Refer to Section 3 for details regarding coordination of work between Honeywell and the BMUA or other parties.

A Deed Notice for Site 153 was recorded on November 30, 2010 with the Hudson County Register of Deeds (see **Appendix G-1**). A modified Deed Notice has been prepared to reflect the completed remedial actions, current block and lot information, and current NJDEP deed notice format. The modified Deed Notice is expected to be recorded by Honeywell in 2017. When recorded, a copy of the modified Deed Notice will be included in **Appendix G**.

The Deed Notice is a form of institutional control that is used to communicate the presence of contaminated soils, and is intended to help prevent the unauthorized disturbance of the Chromium Remedy. The Deed Notice specifies that the Consent Decrees shall govern if there is any conflict or inconsistency between the terms of the Deed Notice and the terms of the Consent Decrees, or if any action to be taken

pursuant to the Deed Notices is in conflict or inconsistent with the Consent Decrees. The Deed Notice specifies conditions for any alteration, improvement, and/or disturbance of the engineering controls as well as monitoring, maintenance, notification and reporting requirements. These requirements include notification by the site owner/operator to Honeywell and the NJDEP prior to disturbance of the engineering controls, and documentation that applicable worker health and safety laws and regulations are followed during the disturbance and restoration of those controls. Refer to the Deed Notice for Site 153 (**Appendix G-1**) for notification and reporting requirements.

An institutional control for groundwater in the form of a Classification Exception Area (CEA) was established by the NJDEP for Study Area 5 (which includes Site 153, the NJCU Commercial AOC, Site 117, and other sites) and Study Areas 6 and 7 (located on the west side of Route 440) to address chromium in groundwater above the NJDEP groundwater quality standards. A CEA is required where residual groundwater contaminants may remain at concentrations above the NJDEP groundwater quality standards to communicate the presence of, and prevent the use of contaminated groundwater. Maps showing the regional CEA for groundwater are included in **Appendix A-4**.

2.2 NJCU WEST CAMPUS COMMERCIAL AREA

The NJCU West Campus Commercial Area of Concern (AOC) is located in the southwestern portion of the new NJCU west campus. The full campus runs from West Avenue to Route 440, to the east and west, and between Carbon Place and the Home Depot site, to the north and south. The NJCU Commercial AOC abuts the northern portion of Site 153.

Remedial Actions

Construction of the Chromium Remedy was completed at the NJCU site during 2010-2011 in accordance with a Remedial Action Work Plan approved by the NJDEP. Areas of chromium contamination in soils and groundwater and existing engineering controls are indicated on site maps in **Appendix A**. Soil sample locations and concentrations above the NJDEP soil criteria of 20 ppm for hexavalent chromium are indicated in the Deed Notice (Exhibit B) in **Appendix G-2.**

The Chromium Remedy for the Commercial AOC included installation of engineering controls consisting of a multi-layered cap with 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); and
- orange demarcation warning layer (The warning layer consists of an orange colored geotextile material with markings that state in English and Spanish "DANGER DO NOT DIG" and "PELIGRO NO EXCAVAR" to prevent penetration of the underlying cap materials).

The Chromium Remedy also includes engineering controls that are located above the cap, including asphalt paving and clean soil cover (minimum 1-foot in paved areas, 2 feet in landscaped areas, and 3 feet in tree planting areas). The following illustration presents a simplified profile of the Chromium Remedy.

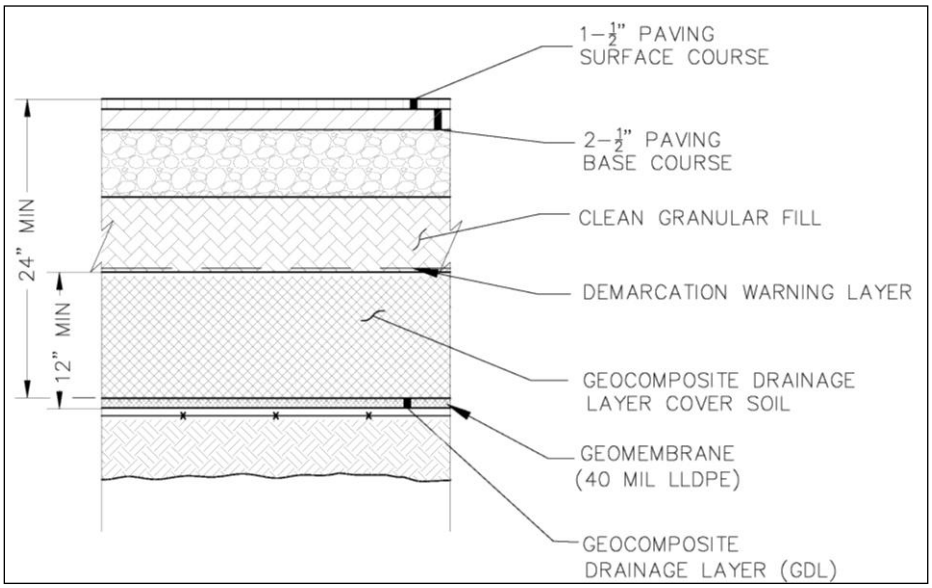


Illustration 4: NJCU Commercial Area Cap Profile

In addition, focused soil excavation was conducted to allow for clean utility corridors (i.e., future Mallory and Stegman Boulevards) for site redevelopment with new utilities to be installed above the cap. Utility corridor maps for the NJCU Commercial Area are included in **Appendix D**.

Other remedial measures included the installation of a perimeter hydraulic barrier partially encompassing the NJCU Commercial AOC cap, consisting of sealed sheet pile, with bottom depths that vary from elevation 0 feet msl to elevation - 35 feet msl, groundwater monitoring wells, and a groundwater recovery and treatment

system. In September 2016, Honeywell proposed, and the parties agreed, that Honeywell would construct approximately 500 additional linear feet of an underground barrier wall to fully encompass the NJCU Commercial AOC cap in order to restrict the flow of the shallow groundwater and facilitate the maintenance of an inward gradient. This WTM and its appendices will be updated in 2017 after the completion of the additional underground barrier wall, in order to reflect the modifications to the groundwater remedy.

The Chromium Remedy, cap area and engineering controls, are indicated on site maps in **Appendix A-3**. For further details regarding the Chromium Remedy including as-built figures, refer to **Appendix B** and the RAR dated September 2012 for NJCU.

In addition to the Chromium Remedy, warning/notice signs were installed within the Commercial AOC with a telephone number to call prior to digging so that Honeywell is notified prior to any subsurface work. Example warning/notice signage and a map showing the locations of the signs as of September 2016 are included in **Appendix E**. Once the construction of Building 6 is complete, the parties will review the locations of the warning/notice signs in the vicinity of Building 6 to determine the number and location(s) of sign(s) in that area following construction. An updated map with the locations of the warning/notice signs will be included in Appendix B in a future annual update to this Worker Training Manual.

Future Site Redevelopment

The NJCU Commercial AOC currently serves as a parking area for NJCU. The potential for exposure to chromium-impacted soils and/or groundwater will exist in the event that future site work, including the construction of Building 6, involves disturbance of the Chromium Remedy or penetration of the cap. This Worker Training Manual addresses protection of workers who may be exposed to chromium-impacted soils or groundwater in conjunction with construction, utility, maintenance, repair or other work within the Commercial AOC.

It should be noted that, with the exception of existing utilities within the portion of Site 153 abutting the NJCU Property and any drains, sumps, extraction wells or monitoring wells associated with the groundwater remedial actions, all utilities in the Commercial AOC will be installed above the cap. Therefore, future utility work in the Commercial AOC, other than any necessary repairs to the trench drains and sumps, and installation of monitoring wells, would not be expected to involve

disturbance of the cap or potential exposure to chromium-impacted soils.

Coordination with Honeywell of planned subsurface work in the Commercial AOC is required to avoid any potential impact to the cap. A "Subsurface Work Authorization Form/Digging and Excavation Permit" (Dig Permit) checklist has been developed for use by NJCU, CRT, and Honeywell to facilitate coordination prior to conducting any subsurface work in the area of the Commercial AOC (see Section 3 and **Appendix H**). Use of the Dig Permit is required for all subsurface work in the Commercial AOC.

Deed Notice

A Deed Notice was recorded for the NJCU Commercial AOC on May 4, 2012. Soil sample locations and concentrations are indicated in the Deed Notice (Exhibit B) in **Appendix G-2**. The Deed Notice is a form of institutional control that is used to communicate the presence of contaminated soils, and is intended to help prevent the unauthorized disturbance of engineering controls. The Deed Notice specifies that the NJCU Consent Decree shall govern if there is any conflict or inconsistency between the terms of the Deed Notice and the terms of the NJCU Consent Decree, or if any action to be taken pursuant to the Deed Notices is in conflict or inconsistent with the NJCU Consent Decree. The Deed Notice specifies conditions for any alteration, improvement, and/or disturbance of the engineering controls as well as monitoring, maintenance, notification and reporting requirements. These requirements include notification by the site owner/operator to Honeywell and the NJDEP prior to disturbance of engineering controls, and documentation that applicable worker health and safety laws and regulations are followed during the disturbance and restoration of those controls. Refer to the Deed Notices for NJCU or Morris Canal for notification and reporting requirements.

Adjacent Site 117

Site 117 (former Ryerson Steel; current Home Depot retail center) is located east of Site 153 Morris Canal and south of the NJCU property. Remedial actions at Site 117 were completed during the late 1990s and included implementation of engineering controls (cap) and institutional controls (deed notice). Engineering controls consist of a multi-layered cap system with geomembrane liner situated beneath existing pavement and landscaped areas. The capping system includes the following components (from bottom to ground surface): geotextile protection fabric, 40-mil linear LLDPE impervious geomembrane; geocomposite drainage material; and minimum 6 to 12 inches of clean fill above the cap materials. A separate

Worker Protection Plan for Site 117, similar to this Worker Training Manual, applies to the property owner/operators/tenants or their contractors, and contains information regarding remedial actions, site maps showing engineering controls and chromium soil concentrations, and coordination of work with Honeywell.

2.3 NJCU RESIDENTIAL AREA

The NJCU Residential Area of Concern (AOC) was remediated for hexavalent chromium to allow for unrestricted use. Accordingly, no controls are needed in this area for worker protection with respect to hexavalent chromium. However, the NJCU Consent Decree calls for segregation of soils with less than 5 ppm hexavalent chromium (in the top four feet of soil) from soils with hexavalent chromium between 5 and 20 ppm (which may be present in soils below 4 feet). Any soil removed from the top four feet of soil needs to be restored, or replaced with soil that is less than 5 ppm hexavalent chromium, and cannot be commingled with the soils that are below four feet, relative to final redevelopment grade. See Section 3.1.10 of the Long Term Monitoring Plan and paragraph 73 of the NJCU Consent Decree for additional information on management of soils in the Residential AOC.

3.0 COORDINATION OF WORK

Prior to performing subsurface work in the area of the Chromium Remedy, any entity conducting such work, including but not limited to the BMUA, NJCU, CRT, easement holders and operators of any portion of the Sites, including their contractors and consultants, must notify Honeywell and provide information regarding the work location and nature of disturbance (i.e., area and depth of disturbance, timing of work). Other parties (e.g.., utilities, easement holders and operators of the Sites) have been advised to contact Honeywell prior to performing subsurface work in the area of the Sites via annual notification letters sent by Honeywell. Honeywell will also coordinate with other parties performing subsurface work once Honeywell becomes aware of their work through notification by the utility or the Terradex LandWatch system. This information will enable coordination of work, establishing requirements for worker protection, handling and disposal of chromium-impacted media, and repair and restoration of the Chromium Remedy. The deed notice requirements also specify notification to Honeywell and the NJDEP prior to any activities that will involve the disturbance of engineering controls.

Subsurface Work Authorization Forms ("Dig Permit") have been developed for work in the Sites (**Appendices H and I**). Use of the dig permit is required for all planned work in the Sites, including planned repairs of any unplanned/unintended disturbances of the Chromium Remedy in the Sites.

According to the Consent Decrees, "*BMUA shall develop a permanent plan to implement health and safety measures for its workers . . . in accordance with OSHA rules related to hazardous materials and shall utilize the plan prepared by Honeywell . . . setting forth the procedures and protections that BMUA shall employ when it conducts activities at Site 153."* See Site 153 Consent Decree, Paragraph 77; NJCU Consent Decree, Paragraph 85. Honeywell will provide for training to BMUA and its environmental consultant, which is currently CRT Associates, and their employees as indicated in this Manual. The BMUA will develop and implement a permanent worker training plan based on the requirements indicated in Section 5. Honeywell will also provide awareness training to NJCU employees as indicated at the end of this section.

Pursuant to Paragraph 71 of the Site 153 Consent Decree and Paragraph 82 of the NJCU Consent Decree, Honeywell is responsible for the removal, replacement and/or disposal of chromium-contaminated soils whenever:

- any section of the BMUA force main sewer pipeline on Site 153 is to be replaced;
- normal operating repairs for any section of the sewer on Site 153 results in removal of chromium soils;
- any portion of ingress and egress and/or roadway areas for which NJCU holds or may in the future hold an easement over Site 153 is being installed, repaired, or replaced; or
- normal operating repairs, improvements or any other work on the NJCU property require removal of chromium soils.

If necessary to implement any required repairs on the force main sewer line, the Consent Decrees require that Honeywell or the appropriate sewer authority remove chromium contaminated soils. Honeywell would make arrangements for disposal of such soils and replacement of soils. The replacement soils brought onto the site must meet the following criteria:

- be deemed appropriate by the BMUA; and
- have a hexavalent chromium concentration less than the more stringent of (i) a formal New Jersey soil standard for unrestricted use or (ii) 1 mg/kg.

The same requirements for the disposal and replacement of chromium-contaminated soils apply for work within the NJCU Commercial AOC. For the NJCU Commercial AOC, future utilities shall be installed above the cap, thus potential disturbances in this area would be primarily related to the trench drains, sumps, or monitoring wells associated with the groundwater remedial actions, or with future development. Refer to the LTMP for details regarding procedures, contingency plan and requirements in the event of future development or other site work that may disturb the Chromium Remedy within the NJCU Commercial Area

As indicated in the Consent Decrees and the Long Term Monitoring Plans, Honeywell, the BMUA and NJCU are required to notify the Plaintiffs and Honeywell prior to any planned or emergency work that will involve the disturbance

of the Chromium Remedy. Deed Notice requirements also specify notification to Honeywell and the NJDEP prior to any activities that will involve the disturbance of engineering controls. The Chromium Remedy and engineering controls are indicated in Section 2 and shown on site maps in **Appendix A**.

Honeywell has established a telephone notification and response system for use by any entity conducting subsurface work, including but not limited to the BMUA, NJCU, CRT, and easement holders and operators of any portion of the Sites, including their contractors and consultants, to notify Honeywell of any work activities planned or required on an emergency basis that may disturb the Chromium Remedy or affect the force main or other utilities within the Site 153 or the NJCU Commercial AOC. The notification and response system facilitates coordination of activities between Honeywell and the BMUA, NJCU and other parties with respect to handling and disposal of chromium-contaminated media that may be generated during work at the Sites.

The notification system includes a telephone answering service (referred to as the Chromium Response Hotline: **855-727-2658**); this number is also included in Deed Notice documents for providing notification to Honeywell prior to disturbance of the Chromium Remedy. All parties who plan to perform any work that may have the potential to disturb the Chromium Remedy and/or cause exposure to chromium-impacted media beneath the cap materials must notify Honeywell and determine what level of worker protection is appropriate and if the proposed work activities comply with or are applicable to the deed notice requirements.

3.1 SOP FOR COORDINATION OF WORK BETWEEN HONEYWELL AND THE BMUA

Honeywell in cooperation with the BMUA has developed a Standard Operating Procedure (SOP) for identifying and coordinating work in the area of the force main sewer line. The SOP addresses work performed as part of planned maintenance work or required as a result of an emergency situation. Prior to performing sewer work, BMUA will contact the Chromium Response Hotline, which will prompt Honeywell to coordinate field work activities including proper handling and disposal of chromium-contaminated materials with the BMUA. Refer to the SOP document and to the Subsurface Work Authorization Form/Digging and Excavation Permit in **Appendix I** for further details regarding procedures for coordination of work between Honeywell and the BMUA. For coordination of work between Honeywell and NJCU refer to sub-section 3.3 of this section, the flow chart presented in **Figure**

2, and Subsurface Work Authorization Form/Digging and Excavation Permit in **Appendix H**).

3.2 COORDINATION OF WORK BETWEEN HONEYWELL AND THE BMUA

The following steps summarize procedures for coordination of work between Honeywell and the BMUA for performing subsurface work in the area of Site 153 or NJCU Commercial AOC:

1. BMUA identifies work project (e.g., sewer/utility repair or replacement) at the Sites.
2. BMUA notifies Honeywell of the work location and the estimated schedule/timing for completion of work via the Chromium Response Hotline.
3. For emergency situations related to the force main where work needs to be done within a short timeframe before a determination can be made on whether or not the work is in an area of chromium soils, BMUA's contractor will proceed with work using properly trained contractors (i.e., OSHA 40-hour HAZWOPER training) and Honeywell will provide technical assistance and field support (to be determined in cooperation with the BMUA). For non-emergency situations, Honeywell determines whether or not the proposed work location is within an area of chromium soils and provides confirmation to the BMUA. Honeywell, in consultation with BMUA, reviews the scope of work regarding deed notice disturbance, health and safety requirements including the need for HAZWOPER 40-hour trained workers, and repair and restoration of the Chromium Remedy (including both the soil and shallow groundwater remedies set forth in Article III of the NJCU Consent Decree). BMUA and Honeywell complete the Dig Permit (**Appendix I-1**). If the work location is confirmed to be in an area of chromium soils, Honeywell coordinates with the BMUA and/or its contractor regarding response and field work activities. If Honeywell determines that the proposed work is not in an area of chromium soils, then BMUA would proceed with work without further coordination with Honeywell.
4. Honeywell provides notice to the Plaintiffs and applicable stakeholders regarding the planned actions pursuant to the Consent Decrees; stakeholders include property owners/tenants/lessees/operators and any entity having a utility easement at the site. Plaintiffs shall be notified at least 5 business days in advance of any planned action that will disturb the Chromium Remedy. Plaintiffs shall be notified within 1 business day after notice is

provided to NJDEP after the occurrence of an unplanned or emergency disturbance of the Chromium Remedy.

5. Honeywell provides notification to the NJDEP, as required in accordance with Deed Notice requirements for disturbance of engineering controls (refer to the Deed Notice for notification requirements).
6. Honeywell coordinates with the BMUA as needed for performance of field work including the use of qualified contractors for excavation of chromium-contaminated materials and disposal at a facility licensed to accept such materials, backfilling, and site restoration including repair/replacement of the Chromium Remedy. Work coordination will also include arrangements as needed between the parties to observe or inspect cap repairs and site restoration work. For work involving the force main sewer line, it is expected that BMUA's contractor will take the lead in performing field work associated with excavation and sewer repair/replacement. Honeywell (or its designated contractor) will provide technical assistance and field support as needed for documentation and reporting requirements and make arrangements for disposal of chromium contaminated materials.
7. Following the completion of work in a chromium-impacted area, Honeywell prepares, if applicable, a revised as-built drawing of the Chromium Remedy and/or a map showing the revised limit of the chromium soil contaminated area, and provides a copy of such drawing or map to BMUA. A revised as-built drawing and/or contamination limits map shall be prepared anytime an engineering control is modified, and the revised as-built shall indicate the location of any modification to the engineering controls. Updated as-built drawings and/or maps will also be included as part of the next annual update to the LTMP. All repairs to the engineering controls will be documented in the Quarterly Monitoring Logs required by Section 4.1 of the LTMP.
8. As set forth in Section 4.1.1 of the LTMP, following completion of work involving the disturbance and restoration of the Chromium Remedy (e.g., engineering controls or cap materials), Honeywell will document, through the Certification of a New Jersey Professional Engineer, that the work was completed in compliance with the Consent Decree and that the Chromium Remedy was restored in conformance with the original Final 100% Remedial Design specifications or to a level of protection at least equivalent to the Chromium Remedy as set forth in Article III of the Consent Decrees. The documentation will be provided concurrently with the Report of Deed Notice

Disturbance to the NJDEP and/or concurrently with the Subsurface Work Authorization Form.

3.3 COORDINATION OF WORK BETWEEN HONEYWELL AND NJCU

The coordination of work between Honeywell and NJCU and requirements for work activities involving the disturbance and restoration of the Chromium Remedy in the NJCU Commercial AOC are addressed in the following documents:

- NJCU Consent Decree
- This Worker Training Manual
- Long Term Monitoring Plan
- Deed Notice (**Appendix G-2**)
- Subsurface Work Authorization Form/Digging and Excavation Permit - checklist document developed for the identification and coordination of work between NJCU and Honeywell for implementation and use prior to the performance of any subsurface work in the area of the NJCU Commercial AOC (see **Appendix H**)
- Shallow Groundwater Document that is currently being developed and will be included as Appendix L to the LTMP when completed.

Refer to the LTMP for details regarding monitoring, maintenance, reporting and contingency plan requirements. This Worker Training Manual will be incorporated by reference in the LTMP.

Additional activities and administrative controls include quarterly cap inspections by Honeywell as specified in the LTMP and Deed Notice, and regular communications via calls or meetings between Honeywell and NJCU regarding any upcoming subsurface work by any entity, including but not limited to, NJCU or CRT, or easement holders and operators of any portion of the Sites, including their contractors and consultants, in the area of the NJCU Commercial AOC. The schedule for regular communications and meetings between Honeywell and NJCU, is indicated below:

- Pre-construction phase – monthly
- During construction – weekly
- Post-construction – quarterly

As of the date of this Worker Training Manual, NJCU is in the construction phase and CRT is in the pre-construction phase. The following steps summarize procedures for coordination of work between Honeywell, and NJCU when subsurface work is performed in the area of the NJCU Commercial AOC (also see **Figure 2**). These steps reflect the nature of the NJCU Commercial AOC and that the NJCU Commercial AOC is expected to be subject to future commercial development, consistent with the NJCU Consent Decree.

1. NJCU identifies a work project in the area of the Commercial AOC.
2. NJCU notifies Honeywell of the work project, its location and the estimated schedule/timing for completion of work via the Chromium Response Hotline or other appropriate methods, i.e., periodic calls, meetings and/or email correspondence. NJCU and Honeywell notify Plaintiffs and applicable stakeholders in the NJCU Commercial AOC regarding the planned actions pursuant to the Consent Decrees; stakeholders in the NJCU Commercial AOC include property owners/ tenants/operators and any entity having a utility easement at the NJCU Commercial AOC. Plaintiffs shall be notified at least 5 business days in advance of any planned action that will disturb the Chromium Remedy. Plaintiffs shall be notified within 1 business day after notice is provided to NJDEP after the occurrence of an unplanned or emergency disturbance of the Chromium Remedy.
3. Honeywell reviews the scope of work with respect to the Chromium Remedy and makes a determination, in consultation with NJCU, regarding requirements pertaining to deed notice disturbance, health and safety requirements including the need for HAZWOPER 40-hour trained workers, maintenance of the effectiveness of the Chromium Remedy (including both the soil and shallow groundwater remedies set forth in Article III of the NJCU Consent Decree) during and after construction, and any necessary repair, and restoration of the Chromium Remedy. NJCU and Honeywell will complete the Dig Permit (**Appendix H**).
4. Following completion of the Dig Permit, if the proposed work is determined by Honeywell to involve disturbance of the Chromium Remedy, NJCU and the entity performing the subsurface work will proceed with such work with contractors who are properly trained (pursuant to the requirements of this Worker Training Manual) and Honeywell will provide technical assistance and field support (to be determined in cooperation with the NJCU). If

Honeywell determines that the proposed work will not involve disturbance of the Chromium Remedy, then NJCU may proceed with work without further coordination with Honeywell. If the work is limited to clean cover soils above the orange demarcation layer, then HAZWOPER 40-hour trained workers would not be required; however, Honeywell field oversight may be required (to be determined in consultation with NJCU). In the event of any field changes or design changes during implementation of the work, NJCU must obtain Honeywell's approval prior to proceeding with the work using the Dig Permit Form.

Note: Excavation work within 12 inches of the cap materials (i.e., at or below the warning layer or greater than approximately 12 inches below existing grade) must be performed by hand/soft dig techniques or other method approved by Honeywell which is similarly protective of the Chromium Remedy.

5. NJCU provides notification to the NJDEP, as required in accordance with Deed Notice requirements for disturbance of engineering controls (refer to the Deed Notice for notification requirements).
6. Honeywell coordinates with NJCU as needed for performance of field work including the use of on-site monitoring, qualified contractors for excavation of chromium-contaminated materials and disposal at a facility licensed to accept such materials, backfilling, and site restoration including repair/replacement of the Chromium Remedy. Work coordination will also include arrangements between NJCU and Honeywell to observe and inspect cap repairs and site restoration work. Generally, Honeywell's contractor will perform repair of the cap materials, i.e., geomembrane liner, drainage layer and demarcation layer. Honeywell's contractor will also generally perform repair of the elements of the shallow groundwater system. Restoration of other aspects of the Chromium Remedy or surface features (i.e., clean fill, pavement) will be determined on a case by case basis. Honeywell (or its designated contractor) will provide technical assistance and field support as needed for documentation and reporting requirements and make arrangements for disposal of chromium contaminated materials.
7. As set forth in Section 4.1.1 of the LTMP, following completion of work involving the disturbance and restoration of the Chromium Remedy (e.g., engineering controls or cap materials), Honeywell will document, through the Certification of a New Jersey Professional Engineer, that the work was

completed in compliance with the Consent Decree and that the Chromium Remedy was restored in conformance with the original Final 100% Remedial Design specifications or to a level of protection at least equivalent to the original Chromium Remedy. The documentation will be provided concurrently with the Report of Deed Notice Disturbance to the NJDEP and/or concurrently with the Subsurface Work Authorization Form. NJCU shall provide the Report of Deed Notice Disturbance to Plaintiffs and Honeywell concurrently with its submittal to NJDEP. Honeywell shall ensure that NJCU submits the Report of Deed Notice Disturbance to NJDEP and that it is concurrently submitted to plaintiffs.

8. Following the completion of work in a chromium-impacted area, Honeywell prepares, if applicable, a revised as-built drawing of the Chromium Remedy and/or a map showing the revised limit of the chromium soil contaminated area, and provides a copy of such drawing or map to NJCU. A revised as-built drawing and/or contamination limits map shall be prepared anytime any engineering control including an element of the groundwater system or an element from the warning layer down to the geomembrane LLDPE liner is modified, and the revised as-built shall indicate the location of any modifications to the engineering controls. Updated as-built drawings and/or maps will also be included as part of the next annual update to the LTMP. All repairs to the engineering controls will be documented in the Quarterly Monitoring Logs required by Section 4.1 of the LTMP.

3.4 COORDINATION OF WORK BETWEEN HONEYWELL AND OTHER PARTIES

This Manual applies to all subsurface work in Site 153 and at the NJCU Commercial AOC and is intended to be used by all other parties who may perform subsurface work at the Sites. These other parties may include, but are not limited to, JCMUA, PSE&G, Comcast, Verizon, NJDOT, other utilities, including their contractors and consultants. Honeywell will undertake reasonable efforts to work with other parties to make them aware of this Worker Training Manual and to urge them to use it to protect their workers. In most cases, this effort will consist of Honeywell's contractor reviewing key sections of this document with the crew in the field, prior to the crew starting any work. Honeywell will provide annual notification letters to the above-referenced entities in accordance with the Consent Decrees; these notification letters include information on site conditions, remedial measures, engineering and institutional controls, and instructions for contacting Honeywell prior to performing subsurface work at the Sites. The annual notification letter will also provide, or offer to provide on request, a copy of this Worker Training Manual. Honeywell may also receive notification of work by other parties through the Terradex LandWatch system.

The following steps summarize procedures for coordination of work between Honeywell and other parties and/or their contractors for performing subsurface work in the area of Site 153 or the NJCU Commercial AOC:

1. Other party notifies Honeywell regarding work project (e.g., utility repair) by contacting the Chromium Response Hotline: **855-727-2658** or Honeywell is notified of work through the Terradex LandWatch system.
2. For notification of work through the Terradex LandWatch system, Honeywell will initiate telephone contact with third party contractors and follow-up with electronic mail notification within 24 hours. Honeywell shall send electronic mail notification (A) below, advising the contractor of the nature of the Chromium Remedy (e.g., engineering controls) and the need for approval from Honeywell before proceeding with the soil disturbance (the electronic mail communication will include a copy of the annual utility notification letter); or if Honeywell is able to determine that the proposed work will not impact the Chromium Remedy, Honeywell shall send electronic mail notification (B) below, advising that no further review by Honeywell is

needed. Honeywell will copy Plaintiffs on electronic mail notification (A) to third parties.

Text for email notification to third parties:

(A) "**NOTICE:** Confirming our telephone conversation and based on the information provided, you have proposed actions that may disturb a federal court ordered remedy at a chromium contaminated site for which Honeywell is responsible. We request an on-site meeting with a representative of your firm to review the specific scope and location of the proposed work prior to any disturbance. Honeywell has prepared a Worker Training Manual to address work in chromium contaminated areas. If your proposed actions are found to impact the Chromium Remedy this Worker Training Manual will be made available to you and must be followed."

or

(B) "**NOTICE:** Confirming our telephone conversation and based upon the information provided, the planned intrusive work is outside of the areas of known chromium-impacted soils. We do not require any additional coordination with Honeywell for this scope."

3. For emergency situations where subsurface work needs to be done within a short timeframe before a determination can be made on whether or not the work is in an area of chromium soils, the other party may proceed with work using properly trained contractors (i.e., OSHA 40-hour HAZWOPER training) and Honeywell will provide technical assistance and field support (to be determined in cooperation with the party). For non-emergency situations, Honeywell determines whether or not the proposed work location is within an area of chromium soils and provides confirmation to the party as described above. Honeywell, in consultation with the party performing work, completes the Dig Permit (**Appendix H or I-2**). If the work location is confirmed to be in an area of chromium soils, then Honeywell coordinates with the party regarding response and field work activities. If Honeywell determines that the proposed work is not in an area of chromium soils, then the party would proceed with work without further coordination with Honeywell.

Note: Excavation work within 12 inches of the force main or warning layer (which is beneath pavement east of the force main) must be performed by hand/soft dig techniques or other method approved by

the BMUA and Honeywell which is similarly protective of the Chromium Remedy.

4. Honeywell shall notify Plaintiffs and applicable stakeholders regarding the planned disturbance of the Chromium Remedy pursuant to the Consent Decrees; stakeholders include property owners/tenants/lessees/operators and any entity having a utility easement at the Commercial AOC. Plaintiffs shall be notified at least 5 business days in advance of any planned action that will disturb the Chromium Remedy. Plaintiffs shall be notified within 1 business day after notice is provided to NJDEP after the occurrence of an unplanned or emergency disturbance of the Chromium Remedy.
5. Honeywell or the other party provides notification to the NJDEP, as required in accordance with Deed Notice requirements for disturbance of engineering controls (refer to the Deed Notice for notification requirements).
6. Honeywell coordinates with the party as needed for performance of field work including the use of qualified contractors for excavation of chromium-contaminated materials and disposal at a facility licensed to accept such materials, backfilling, and site restoration including repair/replacement of the Chromium Remedy. Work coordination will also include arrangements as needed between the parties to observe or inspect cap repairs and site restoration work. Honeywell will observe any planned disturbance and restoration of the Chromium Remedy. Honeywell (or its designated contractor) will provide technical assistance and field support as needed for documentation and reporting requirements and make arrangements for disposal of chromium contaminated materials.
7. Following the completion of work in a chromium-impacted area, Honeywell prepares, if applicable, a revised as-built drawing of the Chromium Remedy and/or a map showing the revised limit of the chromium soil contaminated area, and provides a copy of such drawing or map to NJCU, CRT, and/or BMUA, as applicable. A revised as-built drawing and/or contamination limits map shall be prepared anytime any engineering control including an element of the groundwater system or an element from the warning layer down to the geomembrane LLDPE liner is modified, and the revised as-built shall indicate the location of any modifications to the engineering controls. Updated as-built drawings and/or maps will also be included as part of the next annual update to the LTMP. All repairs to the engineering controls will

be documented in the Quarterly Monitoring Logs required by Section 4.1 of the LTMP.

8. As set forth in Section 4.1.1 of the LTMP, Honeywell or NJCU (in consultation with Honeywell or NJCU, and/or the entity responsible for the disturbance, as applicable) prepares and submits a Report of Deed Notice Disturbance with documentation of work and restoration of the Chromium Remedy to the NJDEP (with copies provided concurrently to the Plaintiffs and BMUA and/or NJCU as applicable) in accordance with Deed Notice and Consent Decree requirements. Honeywell will document, through a certification of a New Jersey Professional Engineer, that the work was completed in compliance with the Consent Decree and that the Chromium Remedy was restored in conformance with the original Final 100% Remedial Design specifications or to a level of protection at least equivalent to the original Chromium Remedy as set forth in Article III of the Consent Decrees. The documentation will be provided concurrently with submittal of the Report of Deed Notice Disturbance and/or concurrently with the Subsurface Work Authorization Form. It is anticipated that the Report of Deed Notice Disturbance will be submitted to the NJDEP by the site property owner, specifically Honeywell for Site 153 and NJCU for the NJCU Commercial AOC. If NJCU is responsible for preparing and submitting the Report of Deed Notice Disturbance, Honeywell shall ensure that NJCU submits the Report of Deed Notice Disturbance to NJDEP and that it is concurrently submitted to Plaintiffs.

3.5 TRAINING – BMUA, NJCU AND OTHER ENTITIES

With respect to training of BMUA employees, Honeywell will provide training support to the BMUA and BMUA will develop and implement a permanent worker training plan based on the requirements outlined in the Worker Training Manual. Honeywell in consultation with the BMUA has identified the following training needs for BMUA employees that would be provided by Honeywell (or its designated contractor):

- Chromium Awareness Training - initial and periodic training (every 2 years estimated): estimated 1 to 2 hours and include BMUA staff with responsibility for performing some level of field work.
- HAZWOPER 40-hour training and annual 8-hour refresher training: estimated to include two BMUA supervisory employees.

BMUA's contractors performing field work on the subject site will be required to have applicable health and safety training as indicated in the Worker Training Manual. It is expected that health and safety training requirements for BMUA contractors will be specified as part of BMUA's bidding process for sewer work and that contractors will be required to demonstrate appropriate training documentation to the BMUA prior to performing field work at the subject site.

For NJCU and CRT, Honeywell will provide initial and periodic training (at least biennially) on the Worker Training Manual, chromium awareness and remedial actions completed within the Commercial Area of Concern. The training would be provided by Honeywell (or its designated contractor) and include appropriate NJCU management and staff. NJCU shall include in the training, as appropriate, any other entities conducting regular activities on the NJCU Commercial AOC.

Any entity conducting subsurface work in the Commercial AOC, including but not limited to, NJCU, CRT, easement holders and operators of any portion of the Sites, including their contractors and consultants, performing field work will be required to have applicable health and safety training as indicated in the Worker Training Manual. Health and safety training requirements for any entity allowed by NJCU or CRT to perform subsurface work at the Sites will be specified as part of the bidding process for construction work. For any work to be performed by NJCU or CRT in the Commercial AOC, all contractor bid/design documents are required to adhere to the requirements of the LTMP Sections [2.1.3 (Existing Administrative and Institutional Controls) and 3.3.2.3 (Coordination of Work)] and include descriptive information regarding the Chromium Remedy, engineering controls, applicable restrictions and reference to key documents including the LTMP (which includes the Contingency Plan), Worker Training Manual, and Deed Notice.

The timing for training will be coordinated in consultation with BMUA, NJCU, and CRT.

The BMUA is responsible for providing a copy of the Worker Training Manual to its employees, contractors, lessees, tenants, and operators performing work at the Site 153.

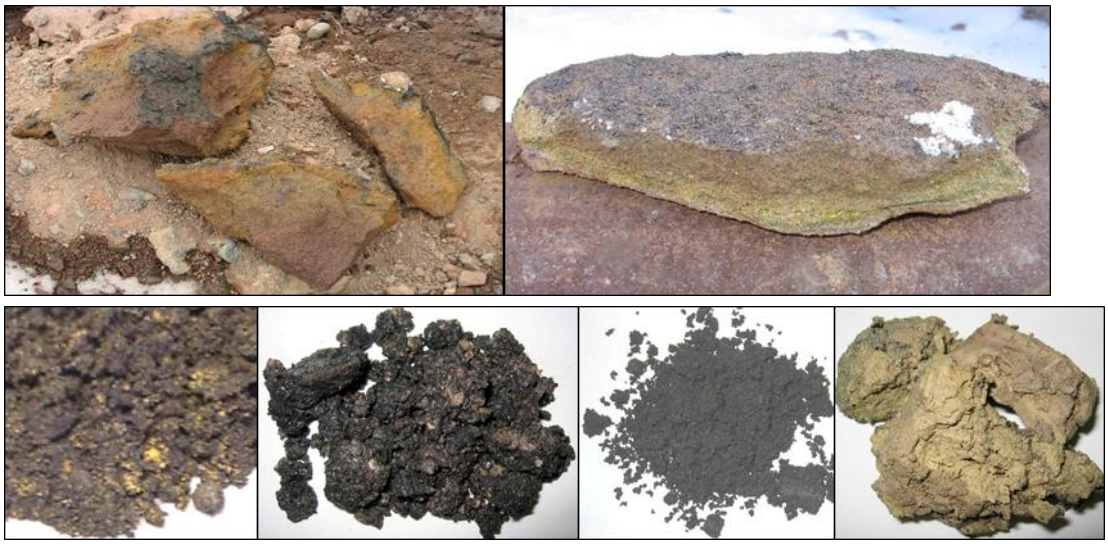
Honeywell is responsible for providing a copy of the Worker Training Manual (a) to any Honeywell contractor performing work at the site; (b) to any entity known to

Honeywell to be intending to perform subsurface work at the Sites; and (c) upon NJCU's or CRT's written request, to any NJCU or CRT contractor performing work at the sites owned by NJCU.

4.0 HAZARD EVALUATION

The section provides information on chromium, including health and safety information and general assessment of potential hazards and health and safety concerns for work on sites where COPR fill or chromium-impacted media such as soils or groundwater are present.

Chromium ore processing residue (COPR) is a by-product of the extraction process of chromium from its ore, which involves the roasting of chromite ore under highly alkaline conditions. COPR contains both hexavalent and trivalent chromium in a complex mineral matrix and may be caustic, i.e., highly alkaline with pH values typically greater than 11. Hexavalent chromium rarely occurs in nature but is produced from industrial processes. COPR is typically a grayish-black granular material and may also be indicated by the presence of yellow to green colored staining or hard layers of reddish brown material. The following are photographs of COPR taken in the vicinity of the Commercial AOC.



Fact sheets with information on chromium, potential health hazards, and precautions to prevent exposure are identified later in this section and included in **Appendix F**.

Potential chemical hazards associated with sewer repair and/or replacement work at Site 153 or disturbance of the Chromium Remedy within the NJCU Commercial

AOC includes the presence of hexavalent chromium in fill soils and groundwater. Chromium soils refers to soils containing hexavalent chromium above the NJDEP soil criteria, currently 20 milligrams per kilogram (mg/kg or parts per million [ppm]). Chromium-impacted groundwater refers to groundwater containing chromium above the NJDEP groundwater quality standards, currently 70 micrograms per liter (µg/L or parts per billion [ppb] based on total chromium).

Potential chemical exposure pathways include:

- Inhalation of airborne dusts and mists that may contain contaminated particulates
- Skin and eye contact and absorption due to direct contact with contaminated soil sediment, and/or liquids
- Incidental ingestion of contaminated soils, liquids, and/or particulates.

All these pathways of exposure must be strictly avoided by workers. Hexavalent chromium is a human carcinogen (i.e., cancer-causing agent). Skin or eye contact with COPR may cause allergic contact dermatitis. Potential exposure to chromium contamination could occur by construction or utility workers performing subsurface activities (e.g., drilling, digging, excavation) that would penetrate the cap materials. Only properly trained and equipped personnel should perform tasks that may involve the disturbance of cap materials and handling of known or suspected contaminated media (i.e., OSHA 40-hour HAZWOPER training). Worker training requirements are included in Section 5. Engineering controls are discussed in Section 2 and indicated on site maps in **Appendix A**.

In the event of any inadvertent disturbance to the Chromium Remedy, workers are advised to stop work, cover and secure the area using appropriate measures (e.g., plastic sheeting, traffic cones or barrier) and notify appropriate site management personnel (Honeywell, BMUA, NJCU, CRT or other applicable party). On-going work would then be coordinated with Honeywell with respect to the management of chromium-contaminated materials and repair/restoration of the Chromium Remedy (see Section 3 for coordination of work).

NOTE: Within the NJCU Commercial Area, an orange geotextile material (warning layer) is installed below clean cover soils at approximately one

foot above the geomembrane liner. Within the majority of Site 153, (South portion adjacent to and south of Home Depot), an orange warning layer is installed at a depth of approximately 3 feet below grade (which corresponds to the bottom of clean fill within previous excavation areas). If the orange warning layer is inadvertently encountered, workers must stop work and notify their supervisor (also see Section 5).

The listed fact sheets, included in **Appendix F**, provide additional information on chromium, potential health hazards, and precautions to prevent exposure.[4]

- Agency for Toxic Substance and Disease Registry (ATSDR) Fact Sheet on Chromium
- Occupational Safety and Health Administration (OSHA) Fact Sheet on Health Effects of Hexavalent Chromium
- New Jersey Department of Health and Senior Services (DHSS) Right to Know Hazardous Substance Fact Sheet

[4] Additional information and studies regarding the potential health hazards of hexavalent chromium can be found at the Integrated Risk Information System (IRIS) U.S. Environmental Protection Agency, Chemical Assessment Summary National Center for Environmental Assessment, Chromium (VI) , (available at https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0144_summary.pdf).

5.0 HEALTH AND SAFETY REQUIREMENTS

This section presents health and safety requirements for workers who may be potentially exposed to hazardous substances including hexavalent chromium. Applicable regulations include Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements at 29 Code of Federal Regulations (CFR) Section 1926.65 and the Hexavalent Chromium Standard (29 CFR 1926.1126; Construction Industry Standard). A summary of worker training requirements for hazardous waste sites and hexavalent chromium is provided for reference on **Table 1**.

The training requirements in this section apply to workers who could be exposed to chromium-contaminated materials and are to be addressed by the employer of the person performing the work. The engineering controls for Site 153 and NJCU West Campus Commercial Area are described in Section 2 and shown on figures in **Appendix A**.

Prior to work that might involve disturbance of the Chromium Remedy, Honeywell must be notified as indicated in Section 3 to confirm requirements and coordinate removal and/or disposal of chromium soils and restoration of the Chromium Remedy. Any entity conducting subsurface work in the Commercial AOC, including but not limited to, BMUA, NJCU, CRT, easement holders and operators of any portion of the Sites, including their contractors and consultants, should incorporate the worker protection requirements of this section into their Health and Safety Plan (HASP), which would be prepared and implemented by site contractors performing the work under OSHA HAZWOPER requirements.

BMUA, NJCU, and CRT personnel are not expected to conduct subsurface activities (e.g., excavation, digging, drilling) that will potentially disturb the Chromium Remedy. It is expected that such activities (if required) would be implemented by contractors for BMUA, NJCU, CRT, easement holders and operators of any portion of the Sites. Any contractor that will perform subsurface work at Site 153 or the NJCU Commercial AOC must be knowledgeable about potential hazards and procedures to be followed when work is conducted in areas of the Chromium Remedy. Therefore, Honeywell must inquire and the BMUA, NJCU, CRT, easement holders and operators of any portion of the Sites, including their contractors and

consultants, conducting subsurface work in the Sites are obligated to confirm to Honeywell that their personnel and contractors have appropriate training.

Honeywell Training

Honeywell will provide the following training (refer to Section 3 for details):

- Initial and periodic training for BMUA, NJCU, and CRT on this Worker Training Manual including chromium awareness, the details of the Chromium Remedy, and procedures for coordination of work with Honeywell

Initial and periodic training for any entity known by Honeywell to be conducting subsurface work on the Sites on this Worker Training Manual including chromium awareness, the details of the Chromium Remedy, and procedures for coordination of work with Honeywell

Requirements Applicable to Subsurface Work at the Sites

The following sections include, but are not necessarily limited to, current OSHA requirements expected to be applicable to work involving disturbance of the Chromium Remedy and potential for exposure to chromium-contaminated soils or groundwater. All parties conducting subsurface work at the Sites are responsible for complying with current OSHA requirements.

Personnel Training

- OSHA HAZWOPER training is required for field personnel whose job responsibilities cause them to be exposed or have the potential to be exposed to hazardous substances/wastes, in this case, hexavalent chromium. This applies to work involving disturbance of engineering controls at the Sites or work within the exclusion zone or regulated area for field work as defined in the site-specific HASP. This requirement does not apply to work that does not involve potential exposure to contaminants, such as non-intrusive work or work limited to the clean cover soils above the warning layer.
- Management and Supervisory Training is required for individuals who manage or supervise personnel engaged in hazardous waste operations.
- Training documentation is required to be maintained by the party conducting the field work. Field work contractor supervisory personnel (i.e., health and safety officer) are responsible for checking training documentation to verify that workers have complete and current documentation, and for prohibiting

workers who do not have applicable training documentation from entry into the work zone.

Determination regarding use of OSHA HAZWOPER 40-hour trained workers will be made on project specific basis based on the nature of field work. It is expected that, in most cases, 40-hour trained workers will be required for any work that will involve disturbance of the orange demarcation warning layer, and that 40-hour trained workers will not be required for work only anticipated to disturb clean soils. Within the NJCU Commercial Area, the orange warning layer is installed below clean cover soils at elevation approximately one foot above the geomembrane liner. Within the majority of Site 153, (South portion adjacent to and south of Home Depot), the orange warning layer is installed at a depth of approximately 3 feet below grade (which corresponds to the bottom of clean fill within previous excavation areas). However, portions of Site 153, next to Home Depot (i.e., pavement areas along Route 440 and driveway entrances) and next to NJCU (pavement area above and west of force main) do not have a subsurface orange warning layer. In areas without a subsurface orange warning layer all subsurface work must use OSHA HAZWOPER 40-hour trained workers. Refer to the site maps in Appendix A for details and specific information regarding the location of engineering controls.

NOTE: If the orange colored geotextile warning layer and/or black geomembrane liner materials described above are encountered by workers who are not property trained according to the requirements of this section, then they must stop work and notify supervisory personnel, who will then notify appropriate NJCU, CRT, and Honeywell management personnel.

Preparation of Site Health and Safety Plan

- Potential exposure to contaminants in the soil or groundwater would be addressed as part of a site-specific HASP, which would be prepared and implemented by contractors performing field work under OSHA HAZWOPER requirements.

Medical Monitoring

- Under the OSHA HAZWOPER standard, medical monitoring is required for workers performing field work onsite for more than 30 days per year and exposed to hazardous substances including hexavalent chromium above

applicable exposure limits. Medical monitoring requirements would apply to most work situations involving disturbance of engineering controls and potential for exposure to chromium-contaminated soils, to be determined on a case by case basis by the entity performing field work. Medical monitoring requirements would not apply to work that does not involve potential exposure to contaminants, such as non-intrusive work or work limited to the clean cover soils above the warning layer. If required, medical monitoring is provided by the employer of the person performing field work.

Hazard Communication

- OSHA hazard communication requirements govern "hazardous substances" and exclude "hazardous waste." For hazardous waste site work, the OSHA Hazard Communication standard only applies to hazardous chemicals brought to the site (e.g., decontamination fluids), not to the contaminants in the soil or groundwater.
- The hazard communication program is required to be part of the Health and Safety Policy and Procedures Manual and be made available to employees for review. A model hazard communication program can be found at the following OSHA website: *http//www.osha.gov/dsg/hazcom/oshacomplianceassistance.html.*
- Containers of hazardous substances are required to be labeled as to the contents, appropriate hazard warning, and the name and address of the manufacturer. The name on the label must match the name on Material Safety Data Sheets/Globally Harmonized System. Material Safety Data Sheets are obtained from the manufacturer when hazardous substances are purchased to conduct field work, and maintained at the work site for all hazardous substances to be used.

In addition to the above requirements to address work at the Sites involving potential exposure to hexavalent chromium, there may be other applicable OSHA training requirements for contractors performing field work. Compliance with such requirements, as for example those pertaining to excavation activities under OSHA 29 CFR 1926.650, is the result of the type of activity undertaken rather than the presence of chromium, thus the BMUA, NJCU, CRT, easement holders and operators working in the Sites, and any entity conducting subsurface work in the Commercial AOC must independently evaluate the need to comply with such

requirements. All parties conducting work at the Sites must check applicability and comply with current OSHA requirements.

TABLE 1
SUMMARY OF WORKER TRAINING REQUIREMENTS

TABLE 1: Summary of Worker Training Requirements
Hazardous Waste Sites and Hexavalent Chromium Standard

Type of Workers	Hexavalent Chromium Standard Awareness Training	40-Hour OSHA Hazwoper Training	24-Hour OSHA Hazwoper Training [1]	On The Job Training	8-hour refresher	8-hour Supervisory	Repiratory Protection	Medical Monitoring [2]	Hazard Communication [3]
Hands On Site Workers (BMUA, NJCU, Contractors and/or Other Parties)	Required for those working in exclusion zone/regulated area who maybe exposed to COPR or hexavalent chromium	Required on hazardous waste sites for site workers. Site workers may potentially be required to wear respirators. This training applies to workers who may be directly exposed (direct contact) to COPR or hexavalent chromium. While the use of respiratory protection isn't expected to be required, this would allow the use of repiratory protection should site conditions warrant	Not applicable - superceded by 40-hour training	3 Days	Required annually	Required if directly supervises other workers	Respiratory protection program is required for workers who work on hazardous waste sites	Medical monitoring is required for workers who work on hazardous waste sites. Typically, HAZWOPER physicals also cover medical monitoring requirements under the Hexavalent Chromium Standard (verify with examining physician)	Hazard Communication Program is applicable for chemical usage including any chemicals brought onsite for use during site work.
Supervisory Type Personnel (BMUA, NJCU, Contractors and/or Other Parties)	Required for those working in exclusion zone/regulated area who maybe exposed to COPR or hexavalent chromium	Not required	Minimum Training allowable for working on hazardous waste sites and typically does not include in-depth coverage of respiratory protection and level C and B personal protection equipment. Cannot be used if respiratory protection will be required.	1 Day	Required annually	Required if directly supervises other workers	These types of workers are unlikely to be exposed to levels above the PEL/TLV therefore, the need for respiratory protection is not likely to be required	Workers are not expected to be exposed to elevated levels above the PEL/TLV, medical monitoring is not likely required under the OSHA Standard	Hazard Communication Program is applicable for chemical usage including any chemicals brought onsite for use during site work.

Notes:

This table is provided for reference purposes; all parties conducting work at the subject sites are responsible to verify applicability and comply with current OSHA requirements, as applicable.

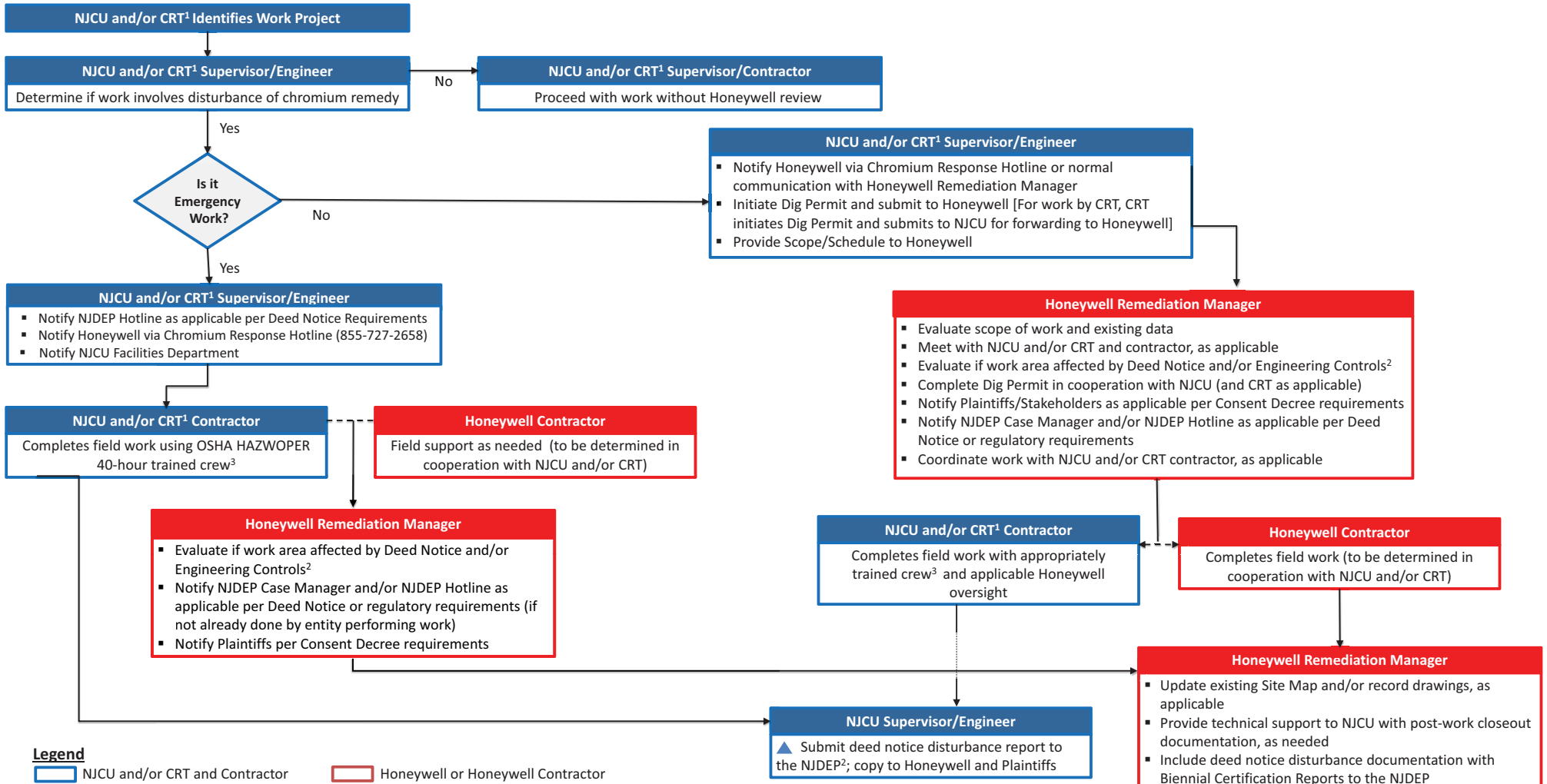
[1] Workers who have only received 24-hour of initial training who then need to wear a respirator will first be required to complete an additional 16 hour of classroom training and two additional days of on the job training and be enrolled in a medical monitoring program. If use of respirator is likely, then worker should receive 40-hours of initial training.

[2] Medical monitoring is required under the Hazardous Waste Operations and Emergency Response (HAZWOPER) standard (29 CFR 1926.65) and the Hexavalent Chromium Standard (29 CFR 1926.1126) if on site more than 30 days per year and exposed to hazardous waste or hexavalent chromium above applicable exposure limits (PEL/TLVs). In addition, medical clearance is required prior to wearing a respirator (29 CFR 1910.134). *If required, medical exams include baseline physicals, periodic exams (typically annually), and exit physicals. The content and frequency of medical exams must be determined in consultation with the BMUA's medical consultant/physican; typical medicial exam requirements include: occupational/medical history, physical exam, blood/urine test, ability to wear PPE (e.g., pulmonary function testing, EKG), and baseline monitoring based on potential onsite exposure to particular contaminants (e.g., hexavalent chromium). For further information, refer to OSHA Guidance Manual for Hazardous Waste Site Activities at http://www.cdc.gov/niosh/85-115.html*

[3] Hazard Communication is applicable to hazardous substances such as any chemical brought onsite for use during site work. For work on hazardous waste sites, a Site Health and Safety Plan would be required to be prepared and implemented by the site remediation contractor to address potential exposure to contaminated soils and/or groundwater. *For more information, refer to the OSHA Hazard Communication Standard at http://www.osha.gov/dsg/hazcom/oshacomplianceassistance.html*

FIGURE 2
NOTIFICATION AND RESPONSE FLOW CHART
FOR NJCU COMMERCIAL AREA

Figure 2 Notification and Response Flow Chart - NJCU Commercial Area



Legend

NJCU and/or CRT and Contractor

Honeywell or Honeywell Contractor

Document/Report to Project File/Agency

1 NJCU and CRT Holdings, LLC (CRT) entered into a Project Development Agreement for Block 6, which requires CRT to comply with the Consent Decree, Deed Notice and Worker Training Manual for any planned construction and/or other disturbance on Block 6 with respect to the Chromium Remedy.

2 See Deed Notice For Notification/Reporting Requirements.

3 Refer to LTMP and Worker Training Manual for details on coordination and requirements for health and safety, excavation and disposal of chromium soils, backfill, and site restoration.

Points Of Contact:

Chromium Response Hotline: 855-727-2658 (24/7 answering service)

Honeywell Remediation Manager: Maria Kaouris 973-455-3302 (office); 862-579-8453 (cell)

NJCU Facilities Department: Kathy Monteiro 201-200-2064 (office)

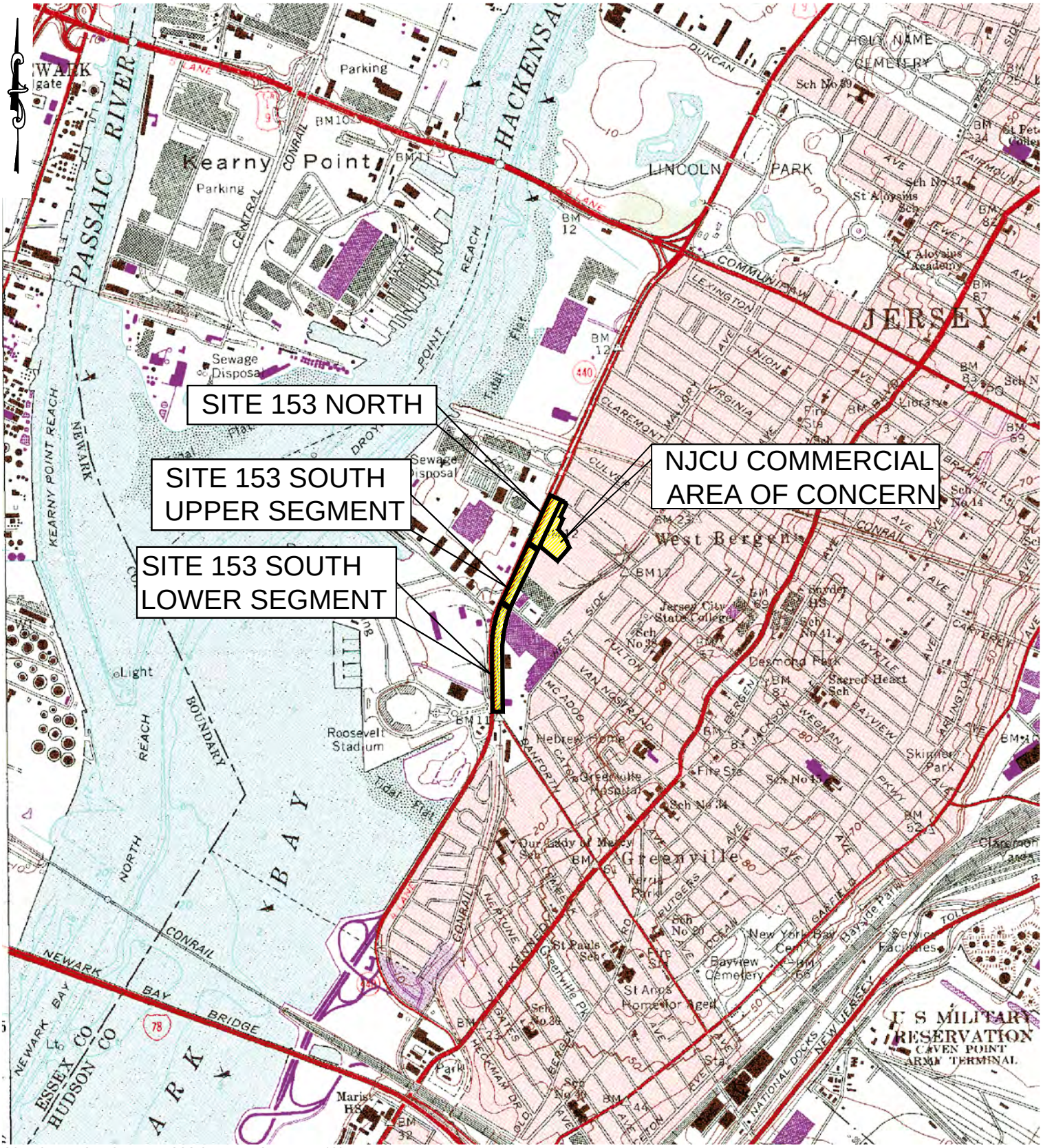
09/16/16

APPENDIX A

SITE MAPS

APPENDIX A-1

SITE LOCATION



SOURCE: JERSEY CITY, NJ USGS QUADRANGLE MAP, 1983

0 2000 4000

SCALE IN FEET

AMEC PROJ No.: 3480130370 DRAWING: 3480130379-6100-SLM0-0000	
PREPARED/DATE: STR 03/02/11	CHECKED/DATE: AGS 03/03/11

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

FIGURE
SITE LOCATION MAP
SA 5 - SITE 153 FORMER MORRIS CANAL
SITES 090 & 184 NJCU CAOC
JERSEY CITY, NEW JERSEY

FILE: P:\CADD\HONEYWELL\JERSEY CITY\SA 5\FIELD MANUAL\153 MANUAL\CURRENT DRAWINGS\3480130379-6100-SLM0-0000.DWG, DATE: 12/13/2013 10:00:21AM Layout: Layout



Legend

- Site 153 Boundary
- Site 153 Cap Area
- NJCU Commercial AOC Cap Area

Source: Interim Remedial Measures Reports dated October 13, 2010 (Site 153 Lower Segment) and November 26, 2013 (Upper Segment).

New Jersey 2007 - 2008 High Resolution Orthophotography, MrSID 5K Tiles; NJ Office of Information Technology (NJOIT), Office of Geographic Information Systems (OGIS); 10/2008.

300 150 0 300

Scale In Feet

Amec Project Number:
3480130370

Prepared/Date:
WSL 03/01/2011

Checked/Date:
EGG 12/16/2013

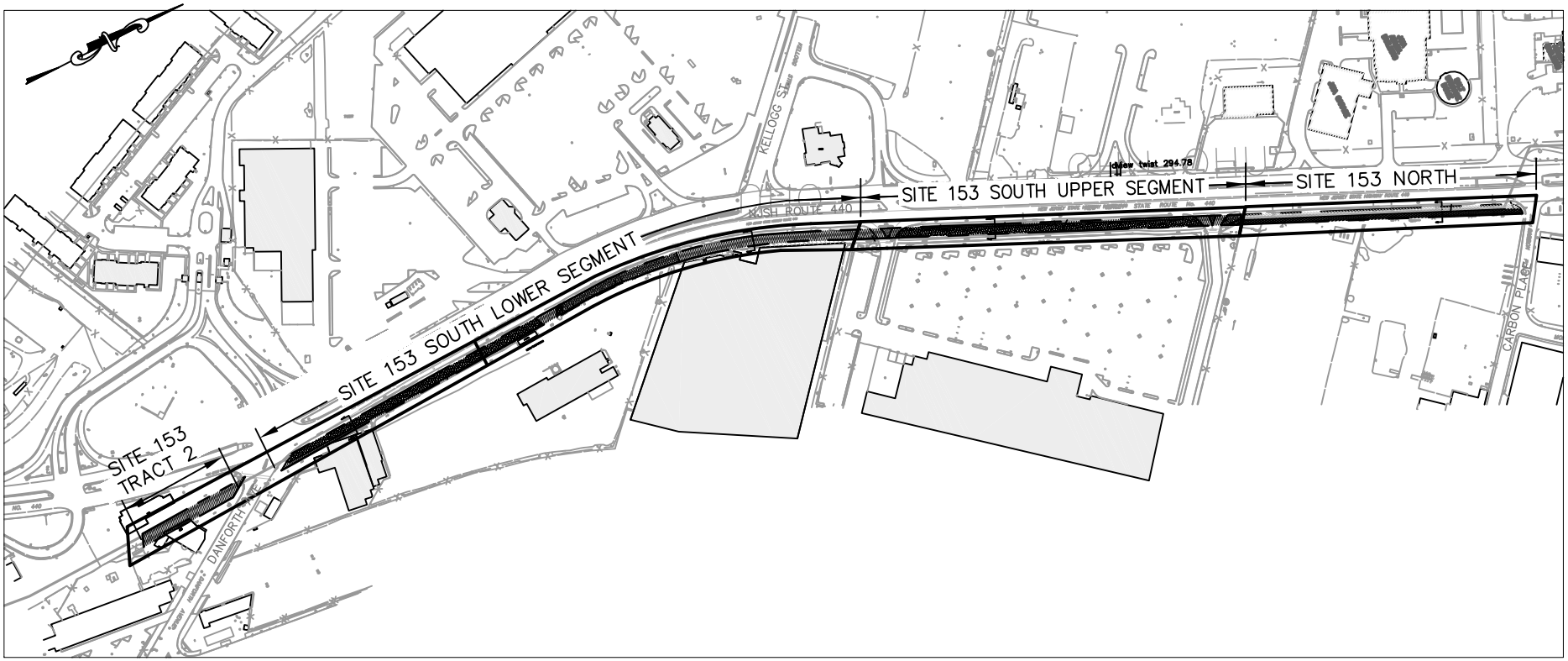
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ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

Figure 1B
Site 153 Former Morris Canal Site
Jersey City, Hudson County, New Jersey

APPENDIX A-2

SITE MAPS
SITE 153 FORMER MORRIS CANAL



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SCALE IN FEET

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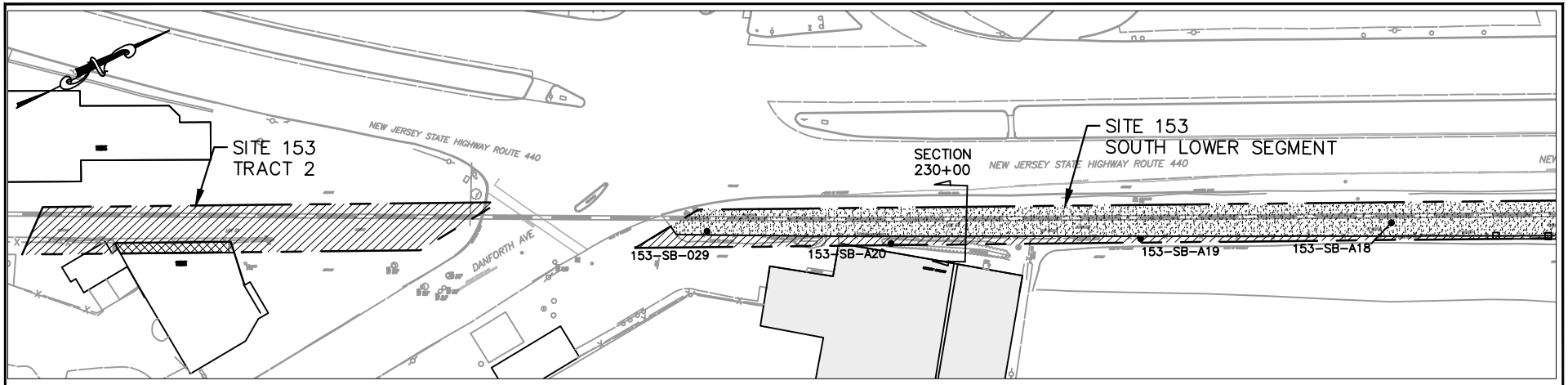
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PREPARED/DATE: STR 02/27/12
CHECKED/DATE: CMR 04/02/12

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

FIGURE 2
SITE MAP KEY
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5

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PLAN VIEW

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SCALE IN FEET

LEGEND

153-SB-AXX — SAMPLE LOCATION

CROSS SECTION DIRECTION & LOCATION

DEED RESTRICTION AREA

BMUA FORCEMAIN

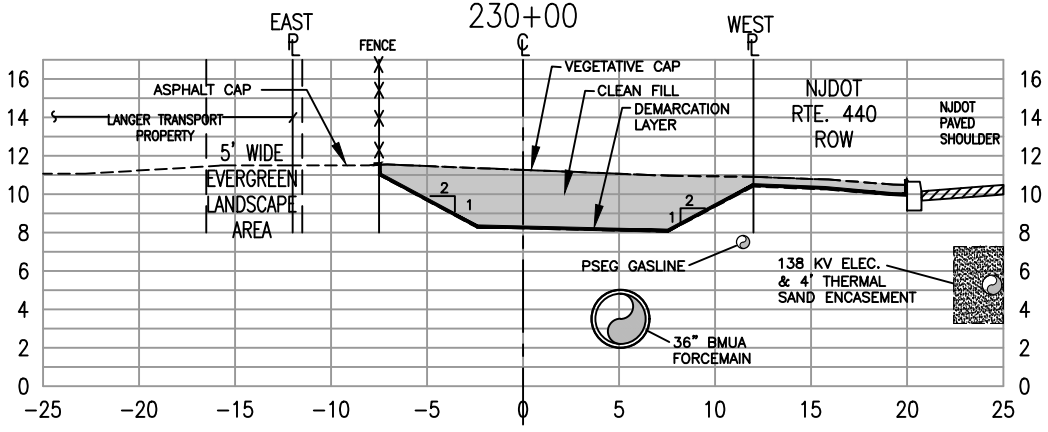
PROPERTY LINE

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.

2. THE 24" NJDOT STORM SEWER IS NOT DEPICTED ON THIS CROSS-SECTION (230+00) , AT 229+71.13 IT CROSSES TO THE WEST SIDE OF ROUTE 441 AND CONNECTS TO STORM PIPE BEYOND THE WESTERN BOUNDARY OF THIS SECTION

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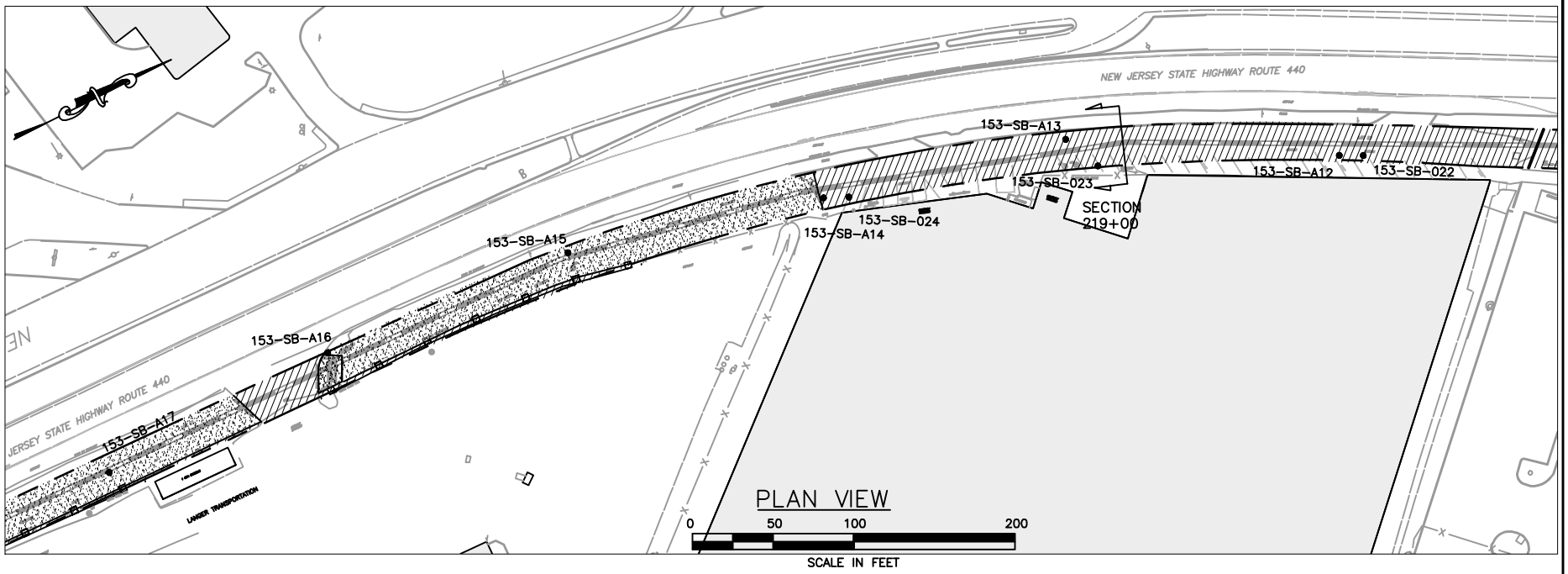
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PREPARED/DATE: STR 02/27/12
CHECKED/DATE: CMR 04/02/12

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

FIGURE □□
SITE 153 SOUTH LOWER SEGMENT #1
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5

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LEGEND

153-SB-AXX — SAMPLE LOCATION

CROSS SECTION DIRECTION & LOCATION

DEED RESTRICTION AREA

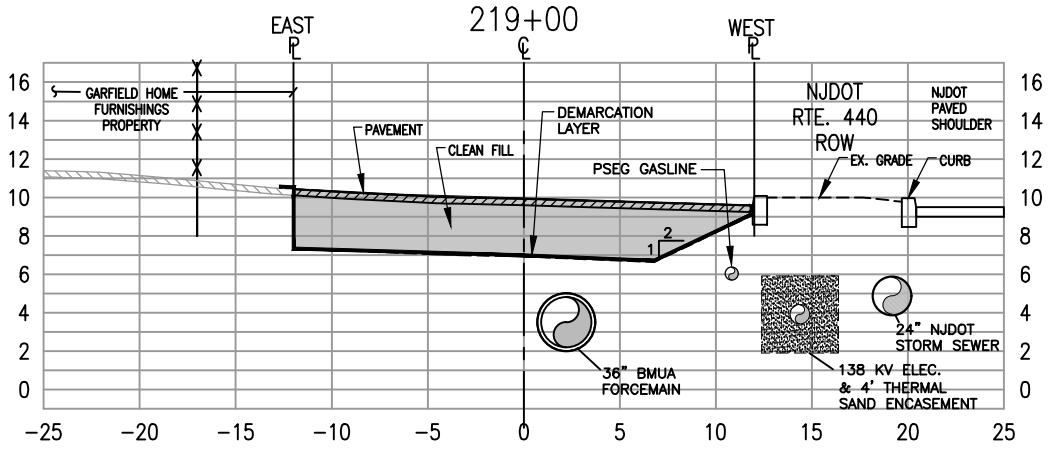
BMUA FORCEMAIN

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.

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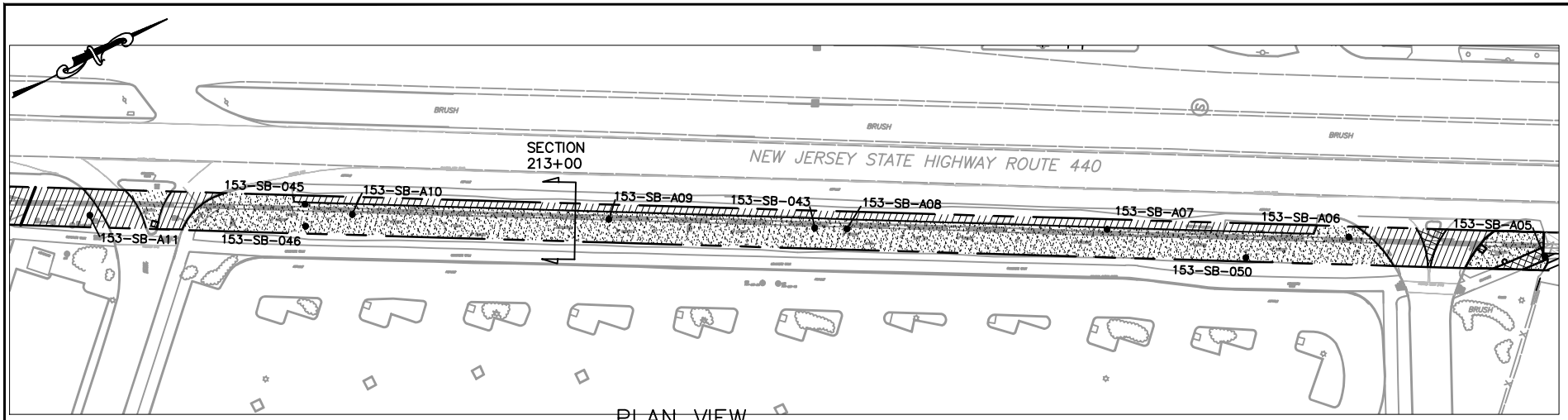
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PREPARED/DATE: STR 02/27/12
CHECKED/DATE: CMR 04/02/12

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

FIGURE □B
SITE 153 SOUTH LOWER SEGMENT #2
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5

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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

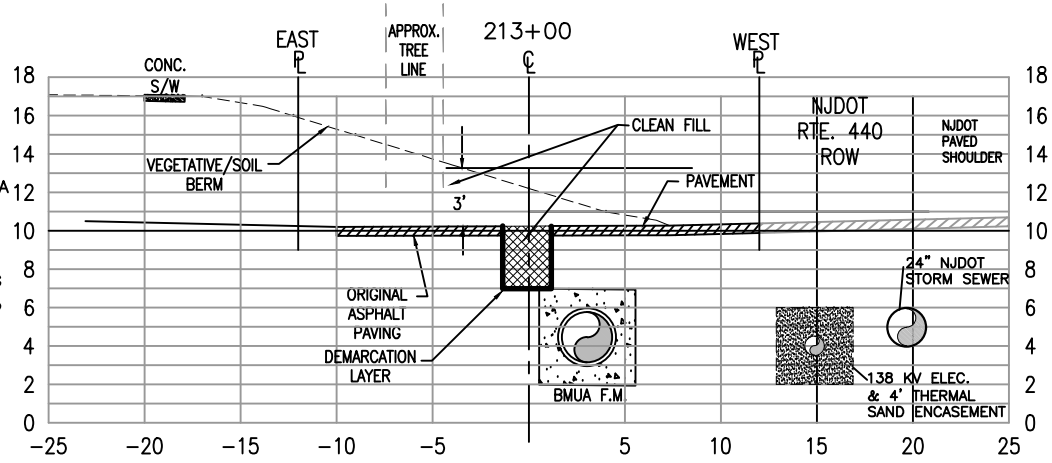
230+00 — CENTERLINE STATIONING

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.

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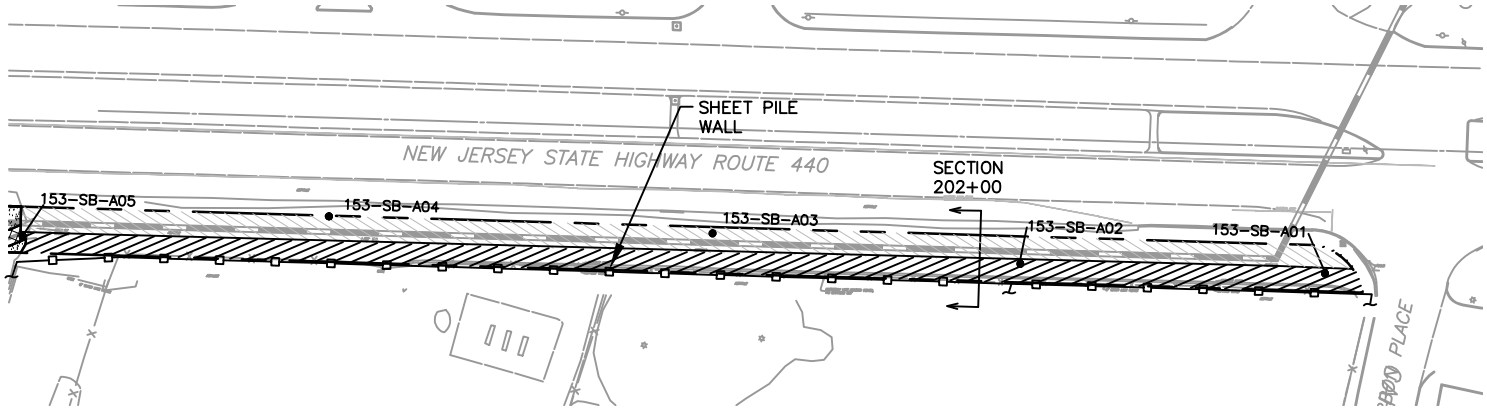
CHECKED/DATE: CMR 04/02/12

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

FIGURE □□

SITE 153 SOUTH UPPER SEGMENT
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5

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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

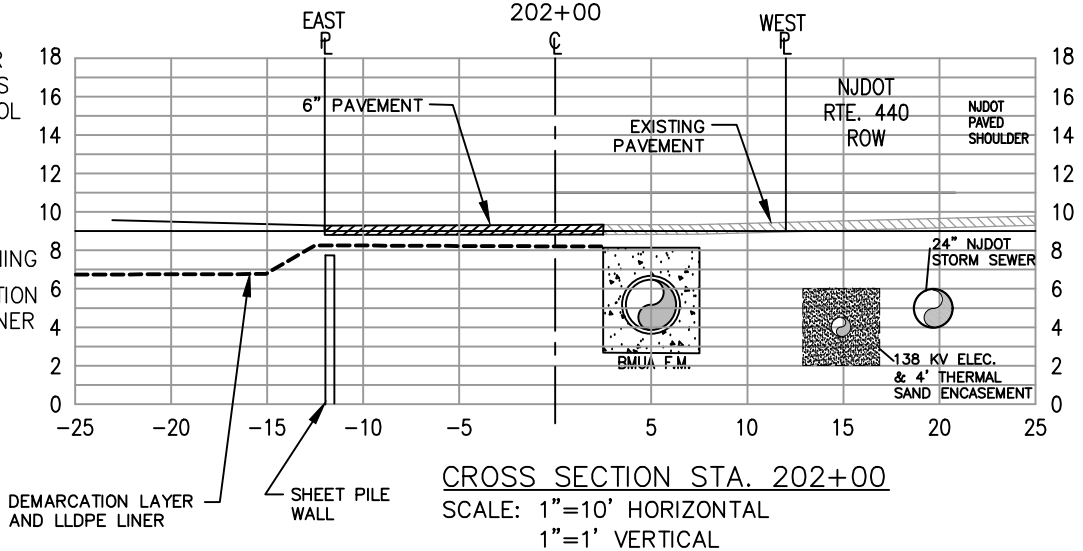
BMUA FORCEMAIN

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

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DRAWING: 3480130379-6100-B200-0000

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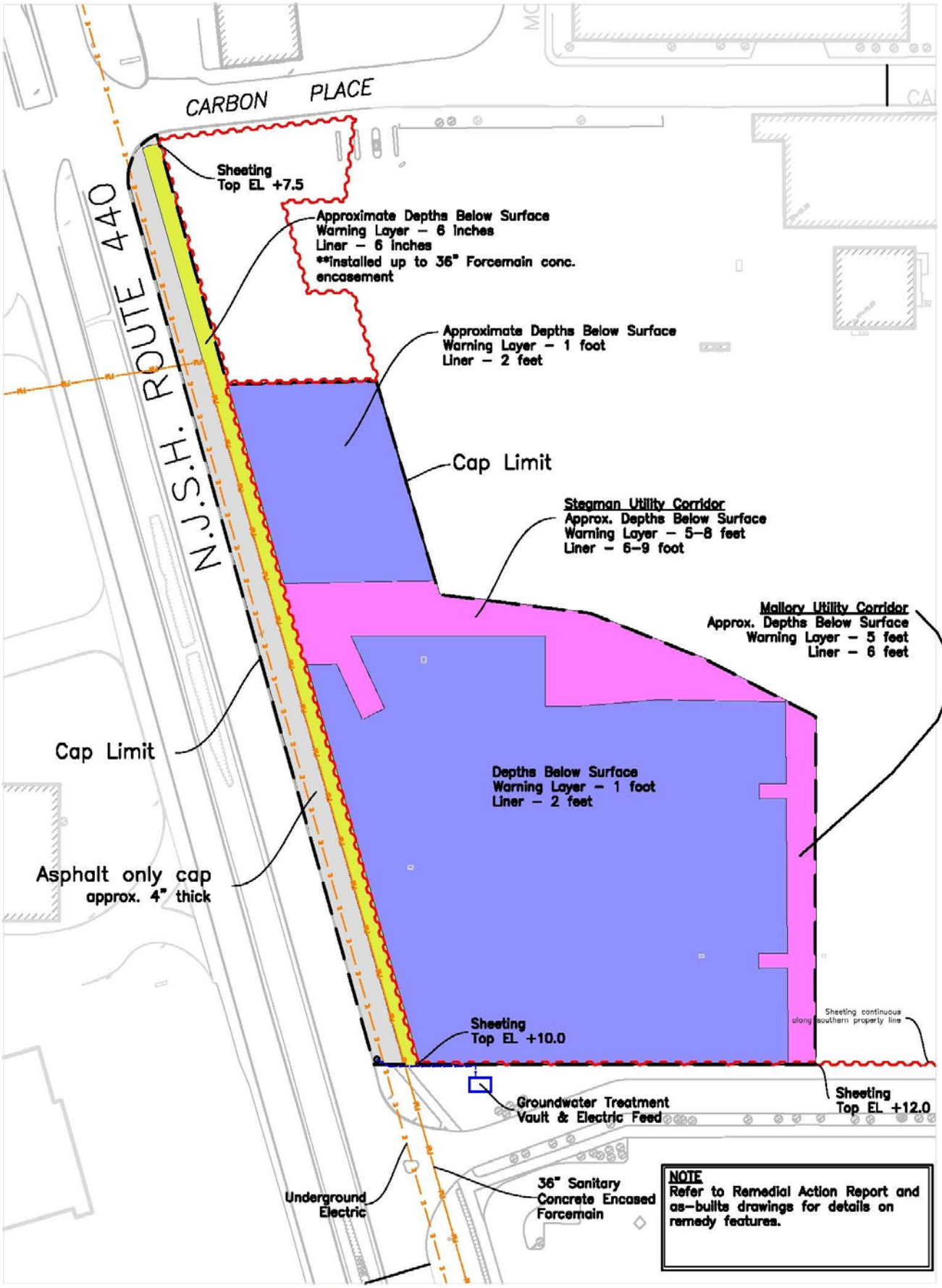
amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

FIGURE □□
SITE 153 NORTH SEGMENT
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY
BLOCK 21902, LOT 1 & BLOCK 26704, LOT 5

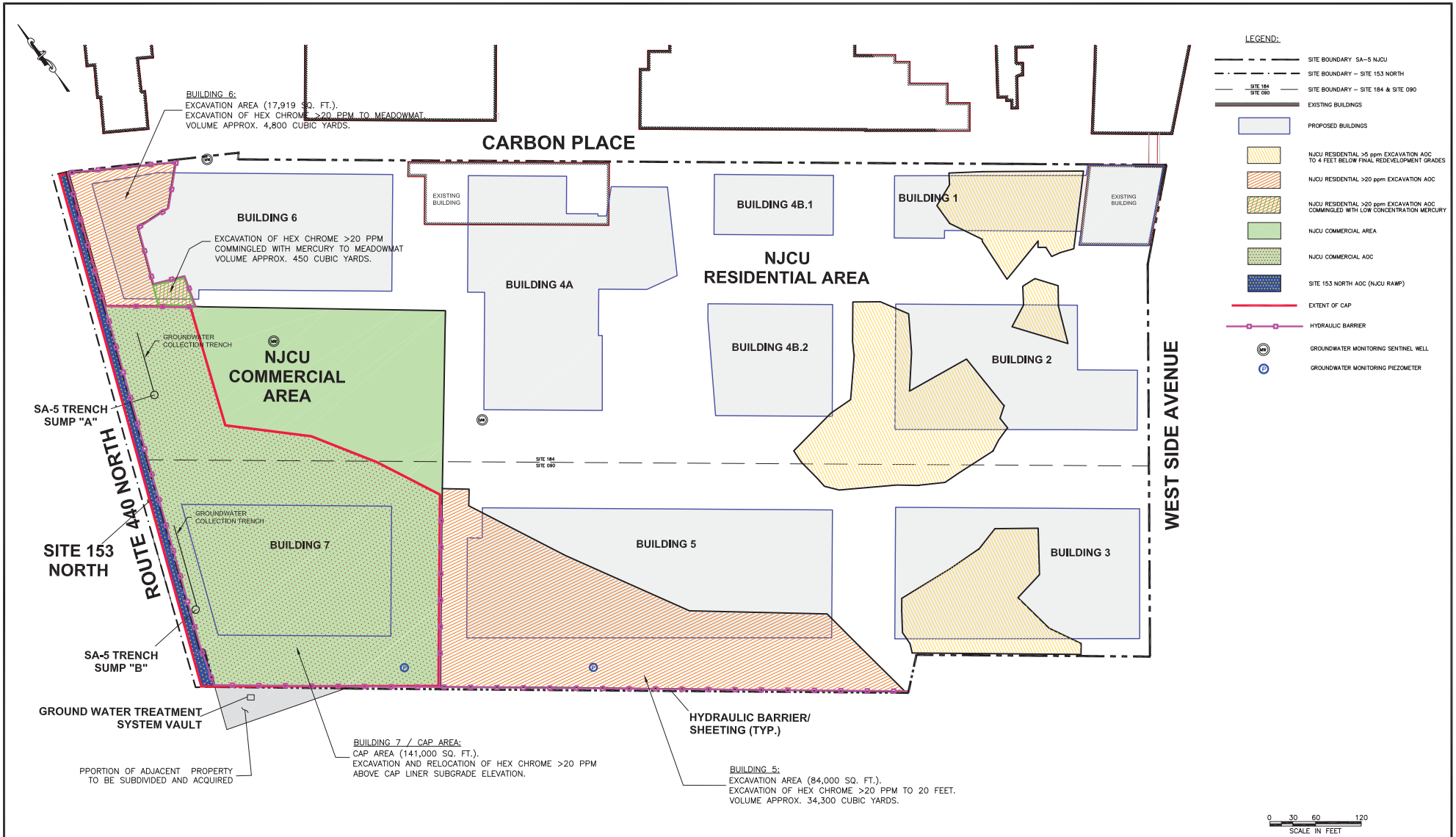
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APPENDIX A-3

SITE MAPS
NJCU COMMERCIAL AREA



NJCU Commercial Area - Cap Illustration



SOURCE: HISTORIC SOIL DATA – DRAFT RIR STUDY AREA 5 (TETRA TECH NUS, NOV. 1999), RIR ADDENDUM (TETRA TECH NUS, OCT. 2004).
BASEMAP: PHASE I CONCEPT PLAN, LANGAN 2 MARCH 2007.
UTILITIES NOT SHOWN.

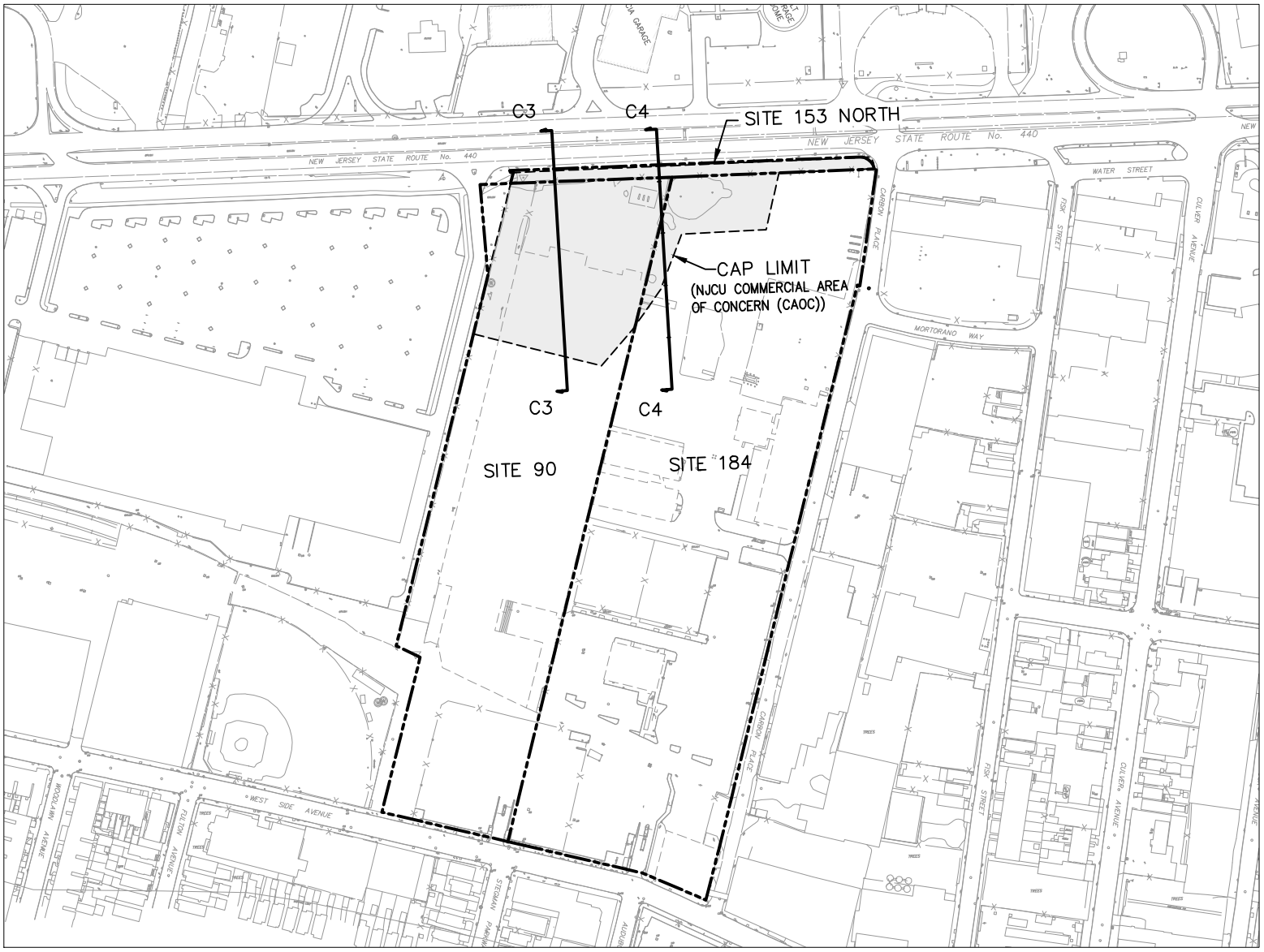
REV.	DATE	STATUS	PRPD BY	CHKD BY
1	5/9/2012	REVISED AS PER DRAFT RAR REVIEW COMMENTS	JMV	BOD

MACTEC PROJECT No. 3480100023
DRAWING: SA–5 NJCU RAR FIGURE 2 – REMEDIAL ACTION SUMMARY

PREPARED/DATE: JMV 11/07/11
CHECKED/DATE: BOD 1/30/12

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

FIGURE 2
REMEDIAL ACTION SUMMARY
REMEDIAL ACTION REPORT
SA-5 NJCU SITE 90/184 AND SITE 153 NORTH
JERSEY CITY, NEW JERSEY



0 150 300 600

SCALE IN FEET

REV.	DATE	STATUS	DRFT BY	CHKD BY

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DRAWING: 3480130370-6100-SKM0-0000

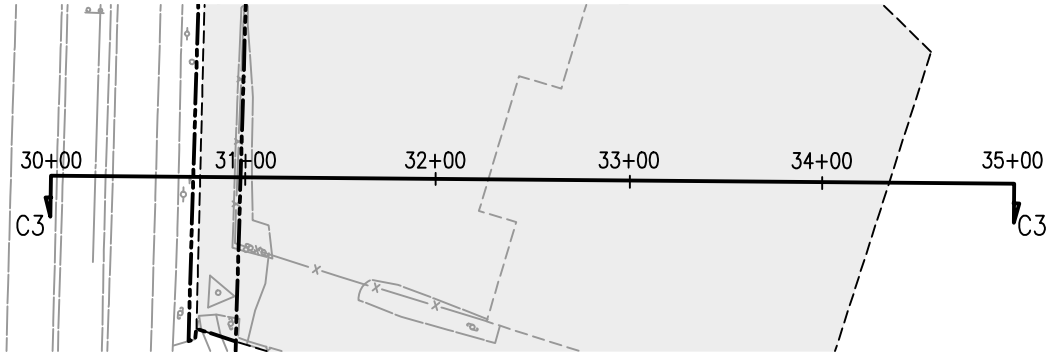
PREPARED/DATE: STR 03/02/11

CHECKED/DATE: AGS 03/03/11

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

FIGURE 3
SITE KEY MAP
SA-5 SITES 090 & 184 NJCU CAOC
SITE 153 NORTH SEGMENT FORMER
MORRIS CANAL
JERSEY CITY, NEW JERSEY

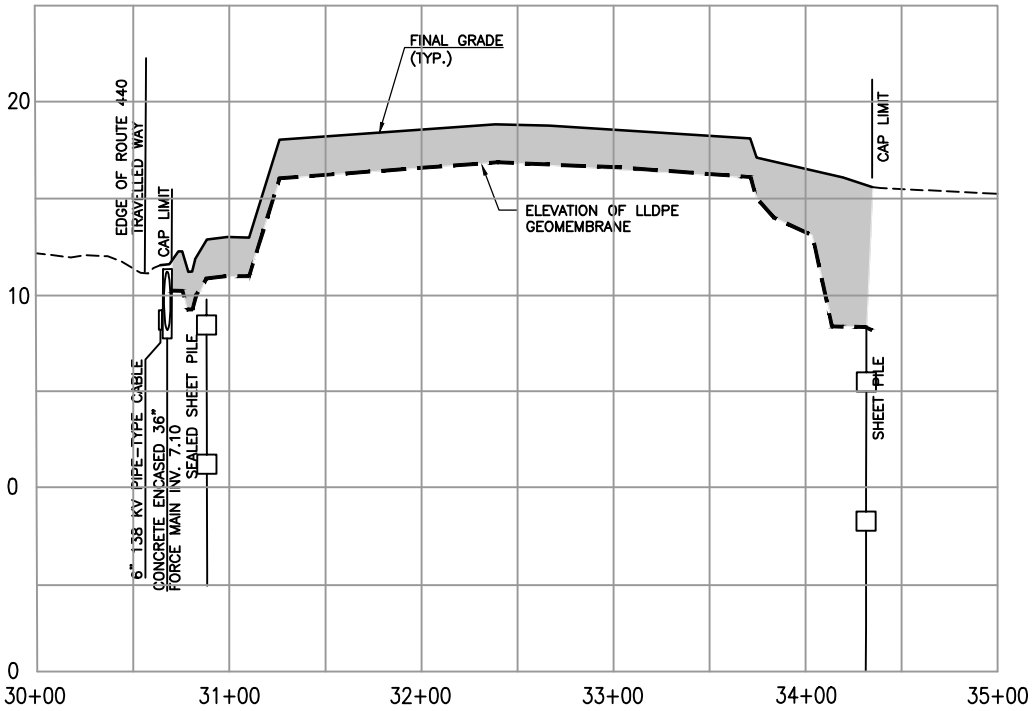
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PLAN VIEW

0 50 100 200

SCALE IN FEET



SECTION C3

SCALE: 1"=10' HORIZONTAL
1"=1' VERTICAL

LEGEND

- CROSS SECTION DIRECTION & LOCATION
- CAP AREA
- CLEAN FILL
- PROPERTY LINE
- 230+00 CENTERLINE STATIONING

REV.	DATE	STATUS	DRFT BY	CHKD BY

MACTEC PROJ No.: 3480130370
DRAWING: 3480130370-6100-NJCU-0000

PREPARED/DATE: STR 03/02/11

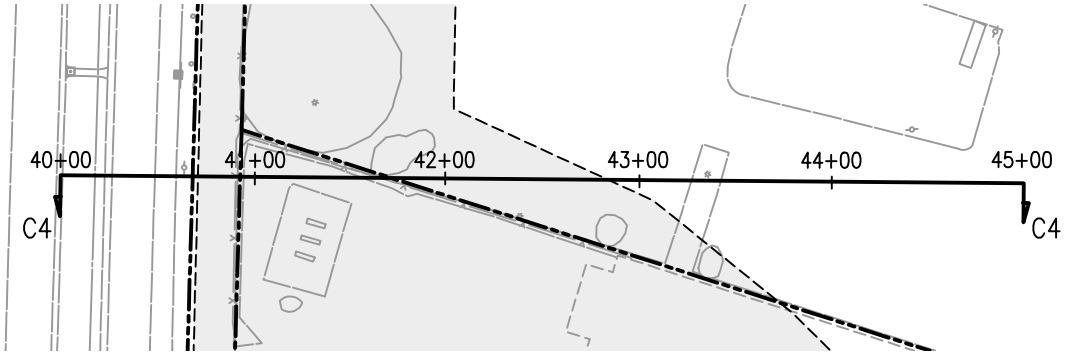
CHECKED/DATE: AGS 03/03/11

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

FIGURE 3

CAP CROSS SECTION
SA-5 SITES 090 & 184 NJCU CAOC
SITE 153 NORTH SEGMENT FORMER
MORRIS CANAL
JERSEY CITY, NEW JERSEY

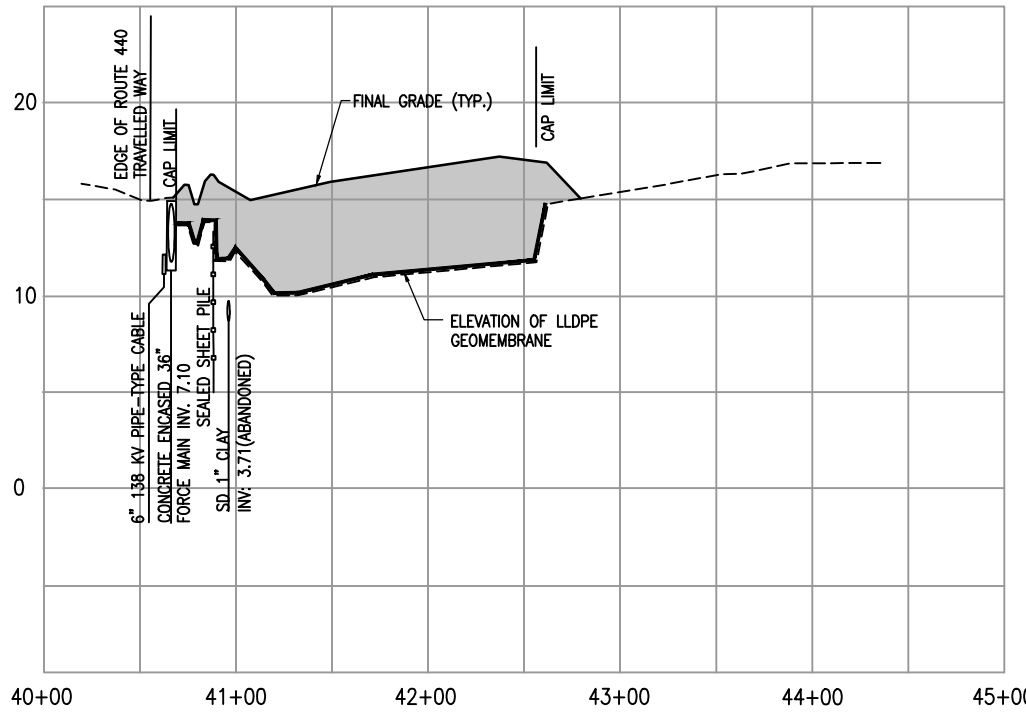
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PLAN VIEW

0 50 100 200

SCALE IN FEET



SECTION C4

SCALE: 1"=10' HORIZONTAL
1"=1' VERTICAL

LEGEND

- CROSS SECTION DIRECTION & LOCATION
- CAP AREA
- CLEAN FILL
- PROPERTY LINE
- 230+00 CENTERLINE STATIONING

REV.	DATE	STATUS	DRFT BY	CHKD BY

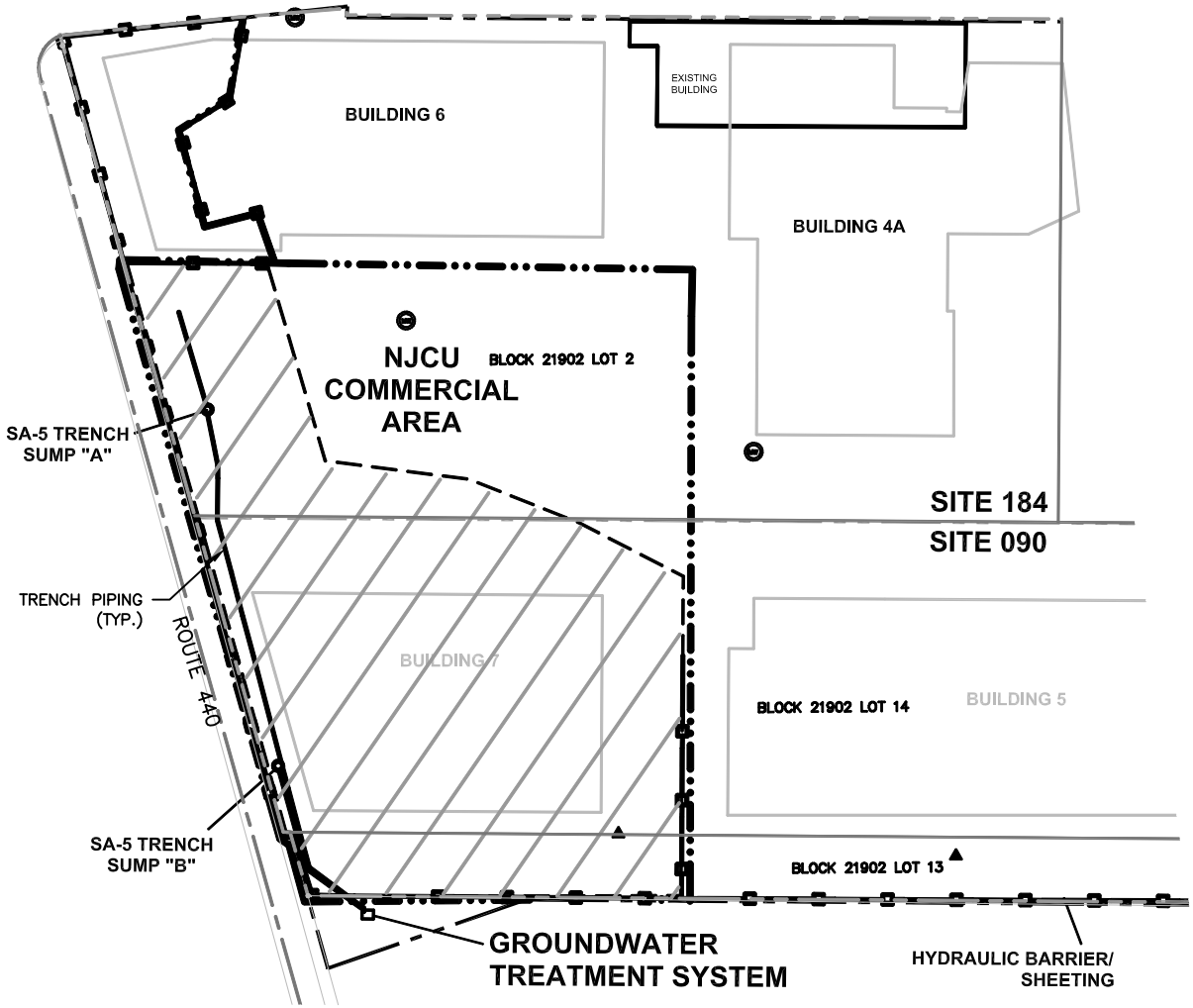
MACTEC PROJ No.: 3480130370
DRAWING: 3480130370-6100-NJCU-0000

PREPARED/DATE: STR 03/02/11
CHECKED/DATE: AGS 03/03/11

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

FIGURE 3B
CAP CROSS SECTION
SA-5 SITES 090 & 184 NJCU CAOC
SITE 153 NORTH SEGMENT FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY

P:\CADD\HONEYWELL\JERSEY CITY\SA 5\FIELD MANUAL\NJCU MANUAL\CURRENT DRAWING\3480130370-6100-NJCU-0000.DWG Fri, 13 Dec 2013 - 10:01am scott.rudkin



LEGEND:

- SITE BOUNDARY SA–5 NJCU
- SITE 184 / SITE 090 — SITE BOUNDARY – SITE 184 & SITE 090
- EXTENT OF COMMERCIAL AOC
- CAP AREA
- GROUNDWATER MONITORING SENTINEL WELL (MW)
- PIEZOMETER LOCATION
- EXISTING BUILDING
- PROPOSED BUILDINGS FOR REDEVELOPMENT
- SHEETING

NOTE:

THE NJCU COMMERCIAL AOC IS LOCATED ON A PORTION OF BLOCK 21902, LOTS 2, 14 AND 13; FORMERLY BLOCK 1286.5 LOT 1 AND BLOCK 1286, LOTS 5 AND 6D RESPECTIVELY.

SOURCE: HISTORIC SOIL DATA – DRAFT RIR STUDY AREA 5 (TETRA TECH NUS, NOV. 1999), RIR ADDENDUM (TETRA TECH NUS, OCT. 2004).

BASEMAP: PHASE I CONCEPT PLAN, LANGAN 2 MARCH 2007.

UTILITIES NOT SHOWN.

0 75 150 300

SCALE IN FEET

REV.	DATE	STATUS	DRFT BY	CHKD BY

AMEC PROJ No.: 3480130370
DRAWING: 3480130370–6100–EC00–0000

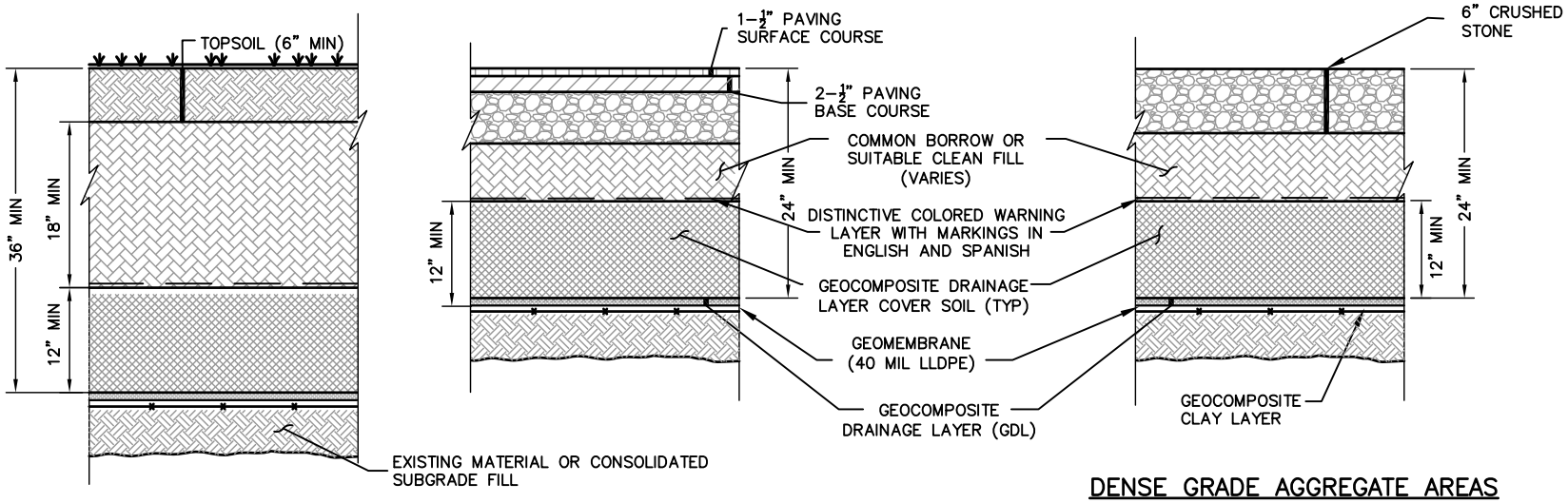
PREPARED/DATE: DL 12/9/2013

CHECKED/DATE: CMR 5/2/2012

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

FIGURE 3C
ENGINEERING CONTROLS
SA-5 NJCU SITE COMMERCIAL AOC
JERSEY CITY, NEW JERSEY

P:\CADD\HONEYWELL\JERSEY CITY\SA 5\FIELD MANUAL\NJCU MANUAL\CURRENT DRAWING\3480130370-6100-EC00-0000.dwg Fri, 13 Dec 2013 - 10:12am scott.rudkin Layout: Layout



LANDSCAPE AREAS
(NOT TO SCALE)

PAVEMENT AREAS
(NOT TO SCALE)

DENSE GRADE AGGREGATE AREAS
(NOT TO SCALE)

SOURCE:

HISTORIC SOIL DATA – DRAFT RIR STUDY AREA 5 (TETRA TECH NUS, NOV. 1999), RIR ADDENDUM (TETRA TECH NUS, OCT. 2004).

BASEMAP DETAILS: PHASE I CONCEPT PLAN, LANGAN 2 MARCH 2007.

REV.	DATE	STATUS	DRFT BY	CHKD BY

AMEC PROJ No.: 3480130370
DRAWING: 3480130370-6100-EC00-0000

PREPARED/DATE: DL 12/9/2013
CHECKED/DATE: CMR 5/2/2012

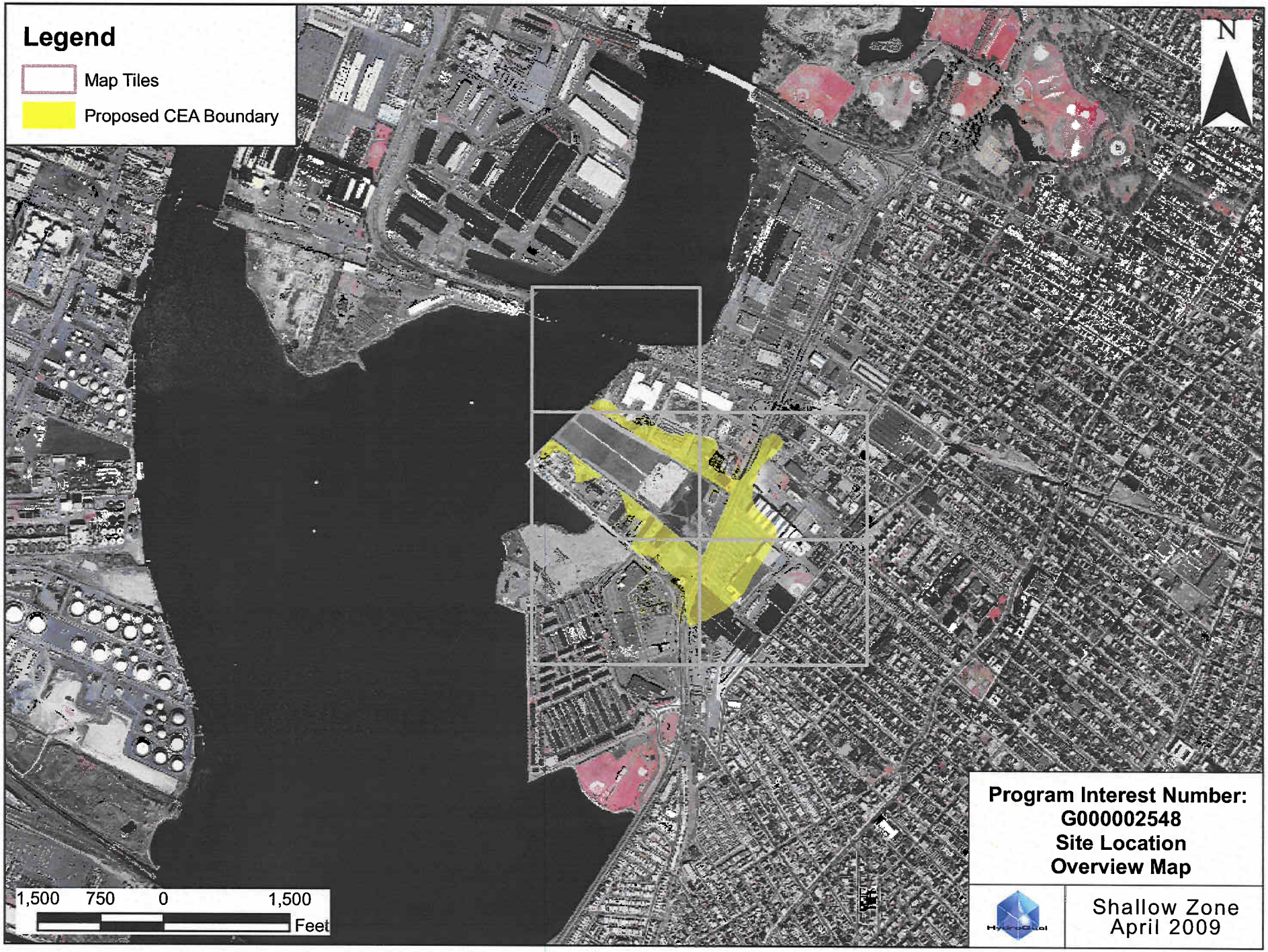
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

FIGURE 3D
ENGINEERING CONTROLS/
CAP CROSS SECTIONS
SA-5 NJCU SITE COMMERCIAL AOC
JERSEY CITY, NEW JERSEY

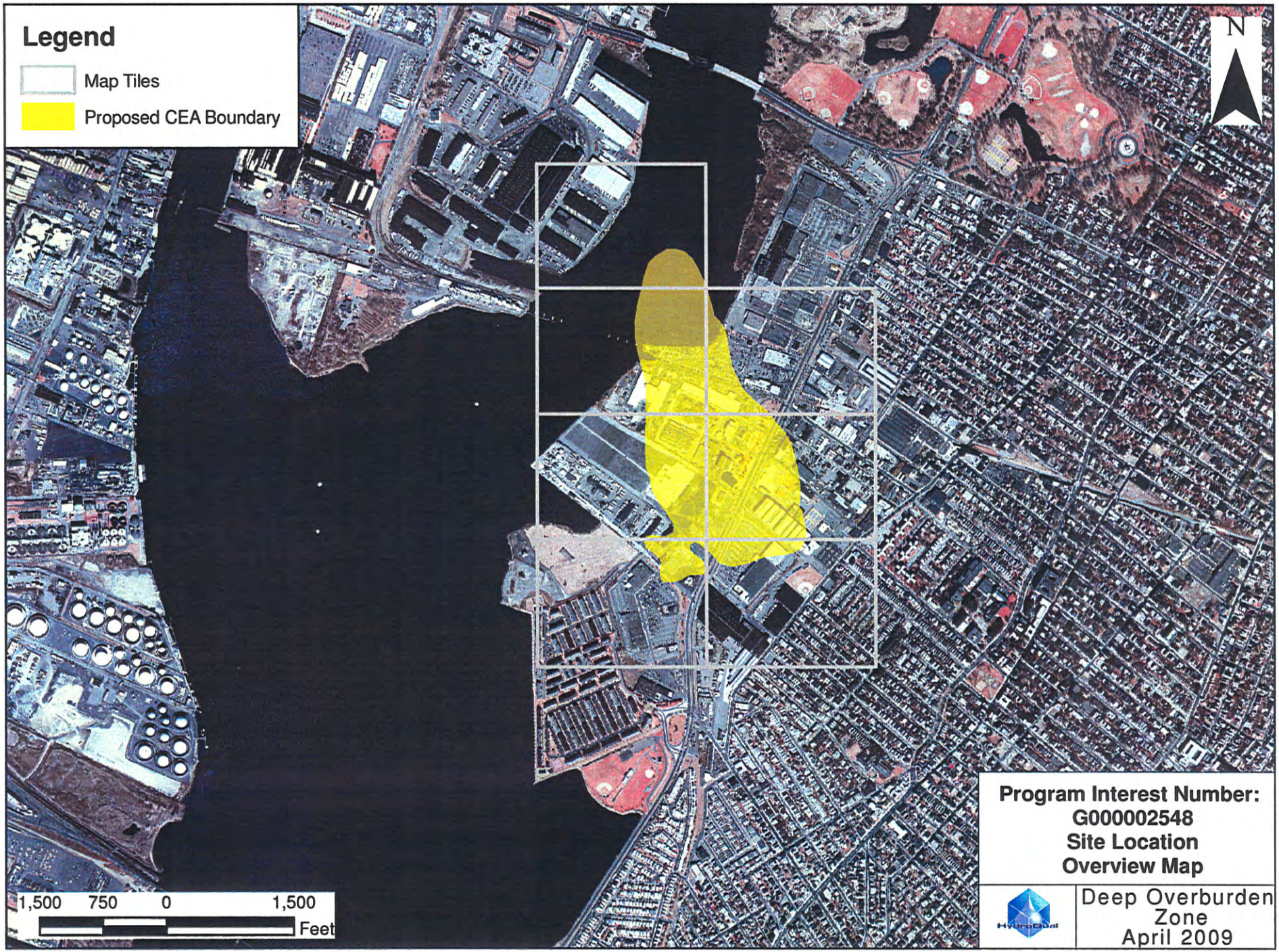
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APPENDIX A-4

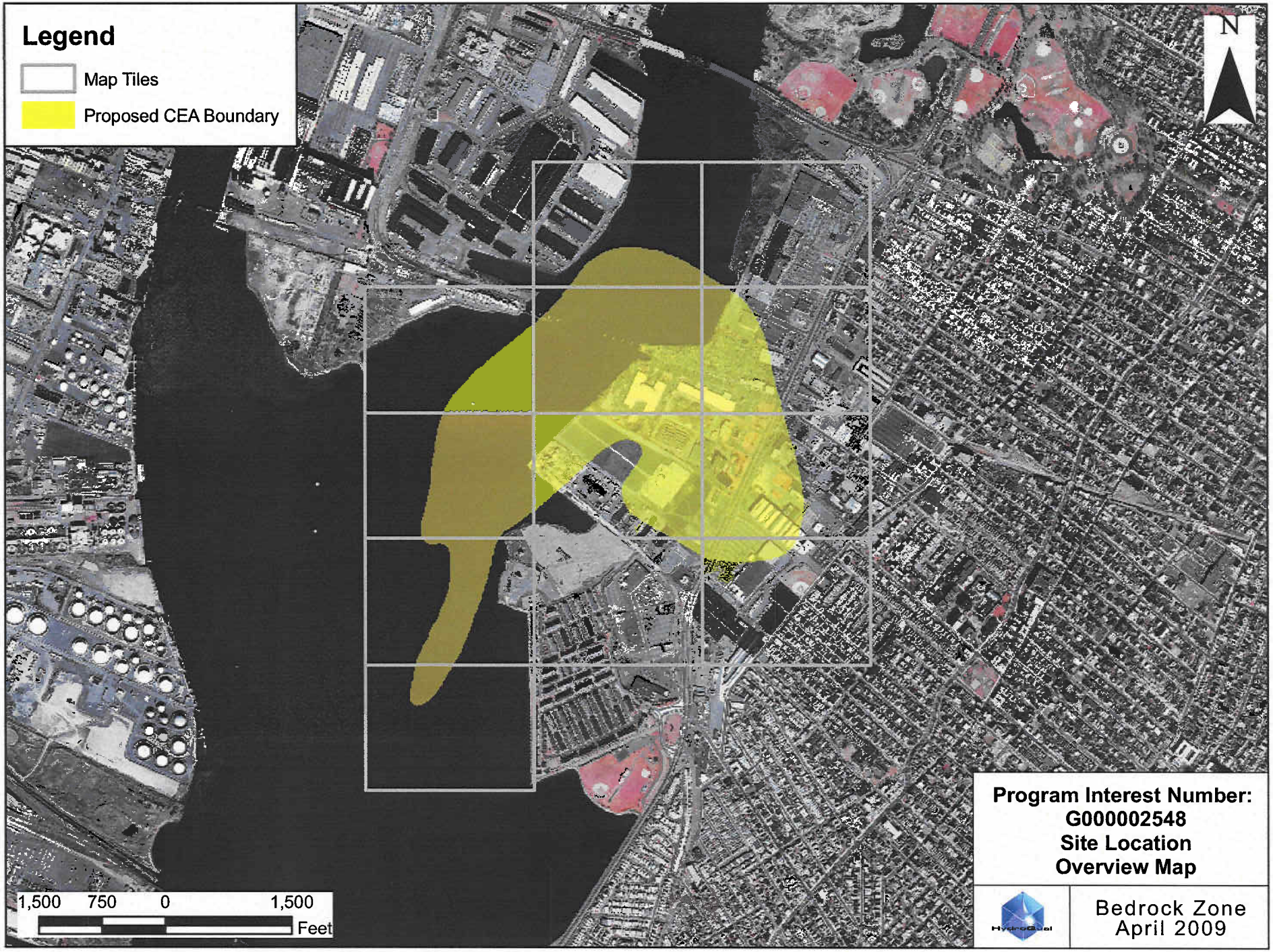
GROUNDWATER CLASSIFICATION EXCEPTION AREA MAPS



Aerial Source: State of New Jersey Office of Information Technology, Office of Geographic Information Systems, 2002



Aerial Source: State of New Jersey Office of Information Technology, Office of Geographic Information Systems, 2002



Aerial Source: State of New Jersey Office of Information Technology, Office of Geographic Information Systems, 2002

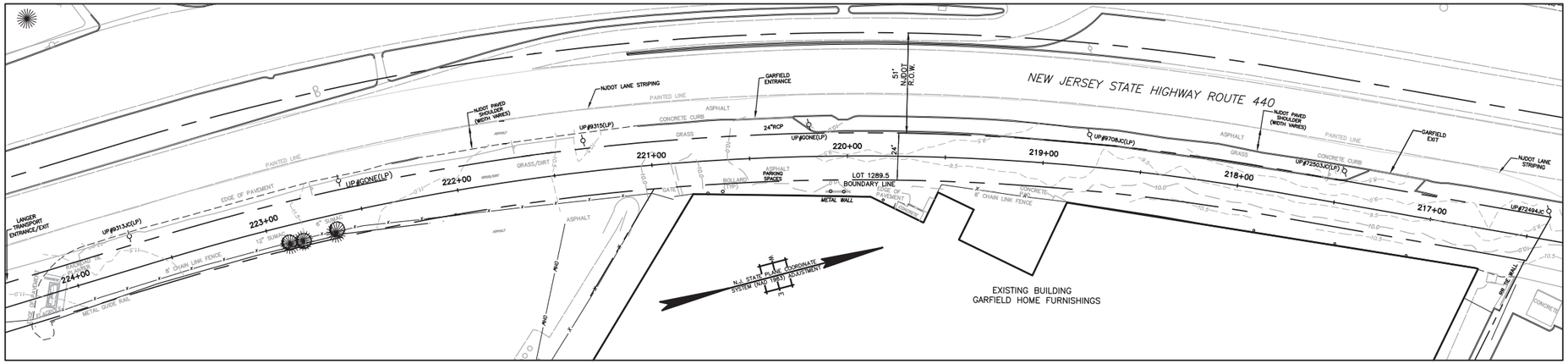
APPENDIX B

CHROMIUM REMEDY AS-BUILT FIGURES

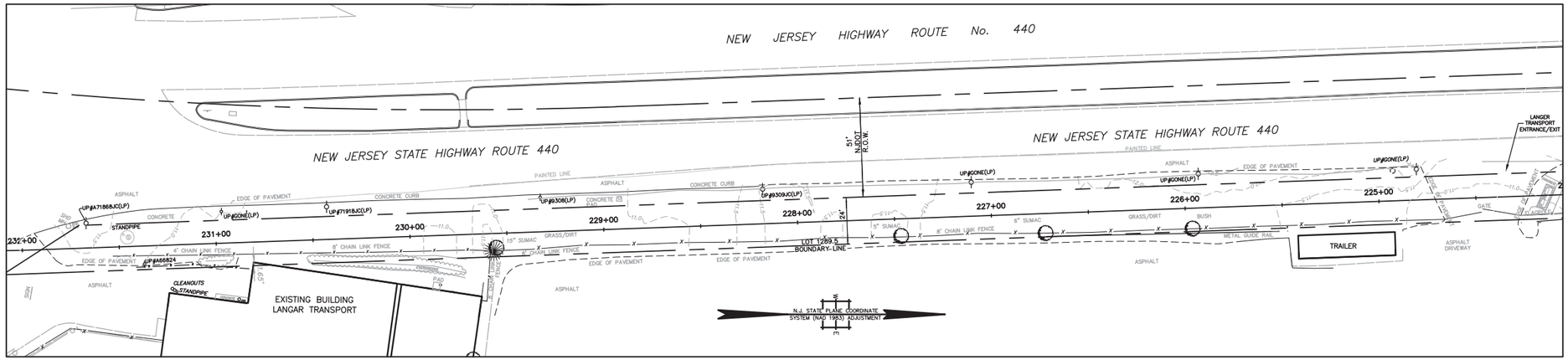
APPENDIX B-1

SITE 153 CHROMIUM REMEDY
AS-BUILT FIGURES

PHASE II
STATIONS 216+50 TO 224+50



PHASE I
STATIONS 224+50 TO 232+00



BENCHMARK:

GPS BASE STATION
ELEVATION: 27.521
DATUM: NAVD 29

NOTES:

1. THIS IS TO CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP OR PLAN IS THE RESULT OF A FIELD SURVEY PERFORMED ON NOVEMBER 3, 2009 BY ENTACT. LLC, WITH PERIODIC FIELD SURVEY CHECKS PERFORMED BY MASER CONSULTING P.A. THE INFORMATION DEPICTED HEREON, CORRECTLY REPRESENTS THE CONDITIONS FOUND AT, AND AS OF THE DATE OF THE FIELD SURVEY, EXCEPT SUCH IMPROVEMENTS OR EASEMENTS, IF ANY BELOW THE SURFACE AND NOT VISIBLE. ACCORDINGLY THE UNDERSIGNED PROFESSIONAL IS NOT RESPONSIBLE FOR THE PRESENCE OF UNDERGROUND UTILITIES OR STRUCTURES, IF SAME ARE NOT VISIBLE OR OTHERWISE DISCLOSED BY ANY AFOREMENTIONED DATA LISTED ABOVE.

2. THIS PLAN IS MADE FOR AND CERTIFIED TO THE PARTIES NAMED HEREON FOR THE PURPOSE(S) STATED. NO OTHER PURPOSE IS INTENDED NOR IMPLIED. THE UNDERSIGNED PROFESSIONALS ARE NEITHER RESPONSIBLE NOR LIABLE FOR THE USE OF THIS PLAN BEYOND ITS INTENDED PURPOSE.

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4. SITE BENCHMARK USED: GPS BASE STATION – ELEVATION = 27.52
THE HORIZONTAL DATUM IS NAD83, THE VERTICAL DATUM IS NGVD29.

LEGEND

12 SURVEYED PRE-EXCAVATION CONTOURS

30 0 30 60
SCALE IN FEET
(1"=30')

R. THOMAS HUGG
NEW JERSEY PROFESSIONAL
LAND SURVEYOR LIC. NO. 36737

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION

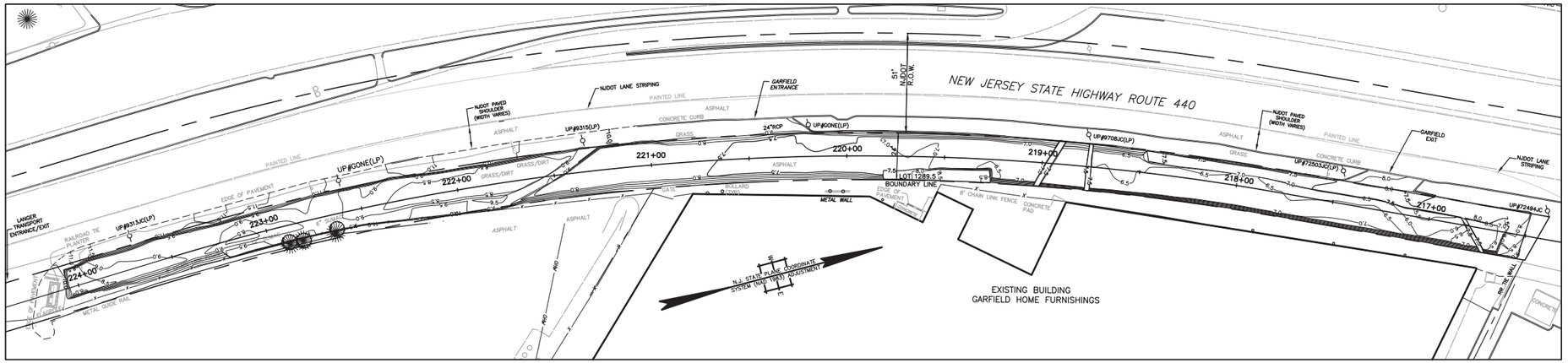
ENTACT
339 Haymaker Rd., Suite 1101
Monroeville, PA 15146
P: 412-357-1100

DRAWING NAME: FINAL AS-BUILT CONTOUR DRAWINGS
PRE-EXCAVATION SURFACE

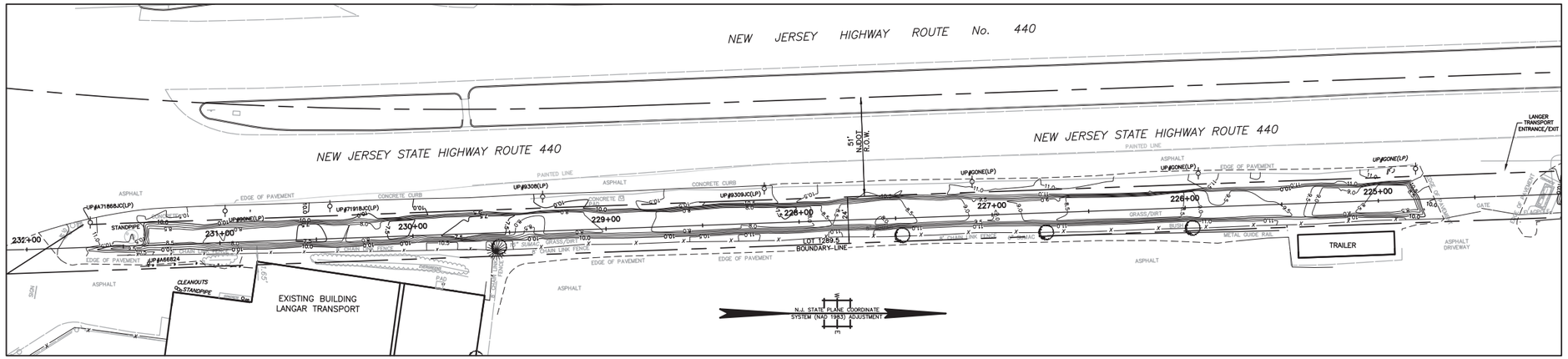
PROJECT NAME & LOCATION: HONEYWELL SA5 / SITE 153
JERSEY CITY, NEW JERSEY

PREPARED BY	J. HOUGH	CHECKED BY	C. PANICO	REVISION
DRAWN BY	J. HOUGH	APPROVED BY	C. PANICO	0
DATE	1/20/2010	DATE	1/20/2010	SHEET NO.
PROJECT NO.	D1177E	DRAWING NO.	D-1177E-001	1 OF 5

PHASE II
STATIONS 216+50 TO 224+50



PHASE I
STATIONS 224+50 TO 232+00



BENCHMARK:

GPS BASE STATION
ELEVATION: 27.521
DATUM: NAVD 29

NOTES:

1. THIS IS TO CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP OR PLAN IS THE RESULT OF A FIELD SURVEY PERFORMED ON DECEMBER 11, 2009 BY ENTACT. LLC, WITH PERIODIC FIELD SURVEY CHECKS PERFORMED BY MASER CONSULTING P.A. THE INFORMATION DEPICTED HEREON, CORRECTLY REPRESENTS THE CONDITIONS FOUND AT, AND AS OF THE DATE OF THE FIELD SURVEY, EXCEPT SUCH IMPROVEMENTS OR EASEMENTS, IF ANY BELOW THE SURFACE AND NOT VISIBLE. ACCORDINGLY THE UNDERSIGNED PROFESSIONAL IS NOT RESPONSIBLE FOR THE PRESENCE OF UNDERGROUND UTILITIES OR STRUCTURES, IF SAME ARE NOT VISIBLE OR OTHERWISE DISCLOSED BY ANY AFOREMENTIONED DATA LISTED ABOVE.

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4. SITE BENCHMARK USED: GPS BASE STATION – ELEVATION = 27.52
THE HORIZONTAL DATUM IS NAD83, THE VERTICAL DATUM IS NGVD29.

R. THOMAS HUGG
NEW JERSEY PROFESSIONAL
LAND SURVEYOR LIC. NO. 36737

LEGEND

12 — AS–BUILT POST EXCAVATION CONTOURS

——— LIMITS OF EXCAVATION

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SCALE IN FEET
(1"=30')

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION

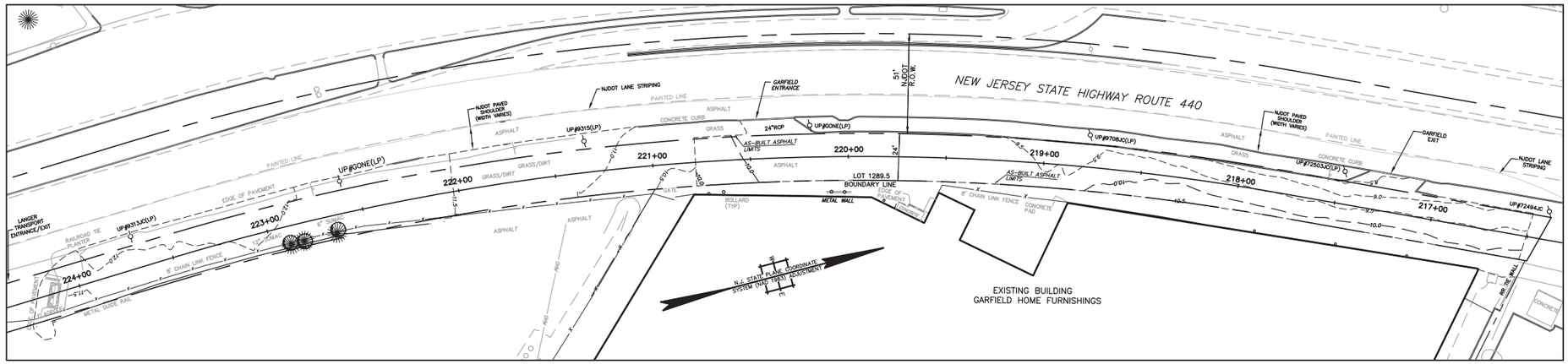
ENTACT
339 Haymaker Rd., Suite 1101
Monroeville, PA 15146
P: 412-357-1100

DRAWING NAME: FINAL AS–BUILT CONTOUR DRAWINGS
POST–EXCAVATION SURFACE

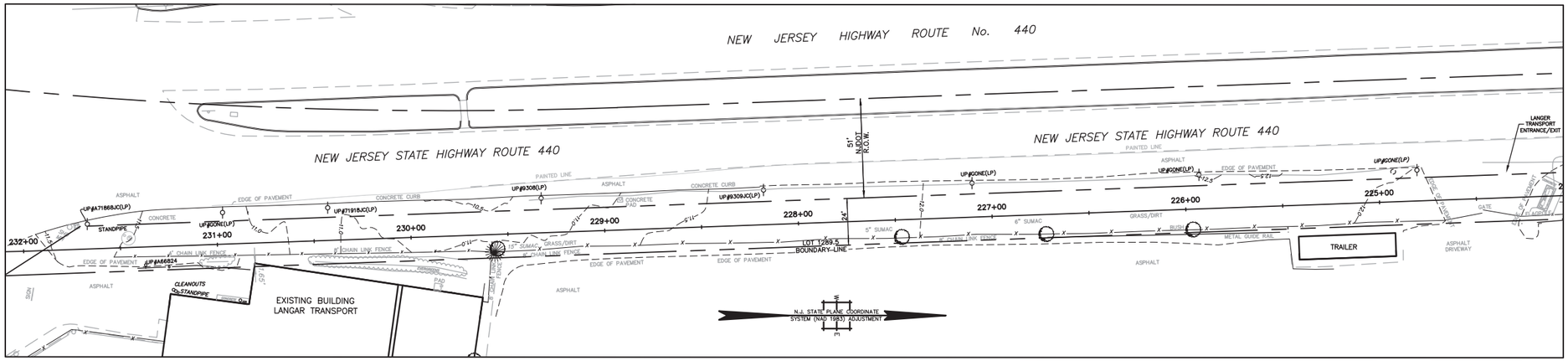
PROJECT NAME & LOCATION: HONEYWELL SA5 / SITE 153
JERSEY CITY, NEW JERSEY

PREPARED BY	J. HOUGH	CHECKED BY	C. PANICO	REVISION
DRAWN BY	J. HOUGH	APPROVED BY	C. PANICO	0
DATE	1/20/2010	DATE	1/20/2010	SHEET NO.
PROJECT NO.	D1177E	DRAWING NO.	D-1177E-001	2 OF 5

PHASE II
STATIONS 216+50 TO 224+50



PHASE I
STATIONS 224+50 TO 232+00



BENCHMARK:

GPS BASE STATION
ELEVATION: 27.521
DATUM: NAVD 29

NOTES:

1. THIS IS TO CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP OR PLAN IS THE RESULT OF A FIELD SURVEY PERFORMED ON DECEMBER 21, 2009 BY ENTACT. LLC, WITH PERIODIC FIELD SURVEY CHECKS PERFORMED BY MASER CONSULTING P.A. THE INFORMATION DEPICTED HEREON, CORRECTLY REPRESENTS THE CONDITIONS FOUND AT, AND AS OF THE DATE OF THE FIELD SURVEY, EXCEPT SUCH IMPROVEMENTS OR EASEMENTS, IF ANY BELOW THE SURFACE AND NOT VISIBLE. ACCORDINGLY THE UNDERSIGNED PROFESSIONAL IS NOT RESPONSIBLE FOR THE PRESENCE OF UNDERGROUND UTILITIES OR STRUCTURES, IF SAME ARE NOT VISIBLE OR OTHERWISE DISCLOSED BY ANY AFOREMENTIONED DATA LISTED ABOVE.

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4. SITE BENCHMARK USED: GPS BASE STATION – ELEVATION = 27.52
THE HORIZONTAL DATUM IS NAD83, THE VERTICAL DATUM IS NGVD29.

R. THOMAS HUGG
NEW JERSEY PROFESSIONAL
LAND SURVEYOR LIC. NO. 36737

LEGEND

12 FINAL TOPSOIL AS-BUILT CONTOURS
12 FINAL ASPHALT AS-BUILT CONTOURS

30 0 30 60
SCALE IN FEET
(1"=30')

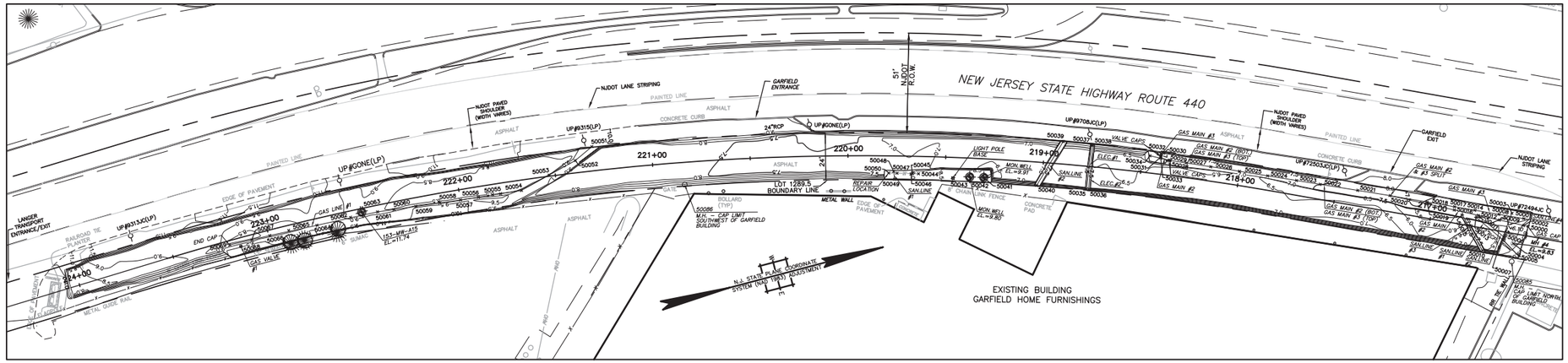
REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION

ENTACT
339 Haymaker Rd., Suite 1101
Monroeville, PA 15146
P: 412-357-1100

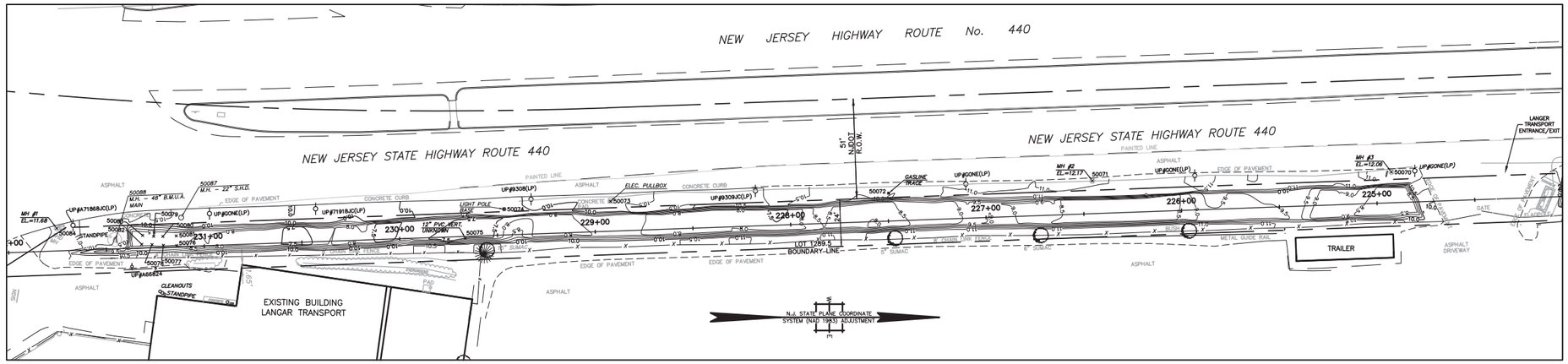
DRAWING NAME: FINAL AS-BUILT CONTOUR DRAWINGS TOPSOIL AND ASPHALT SURFACES
PROJECT NAME & LOCATION: HONEYWELL SA5 / SITE 153 JERSEY CITY, NEW JERSEY

PREPARED BY	J. HOUGH	CHECKED BY	C. PANICO	REVISION
DRAWN BY	J. HOUGH	APPROVED BY	C. PANICO	0
DATE	1/20/2010	DATE	1/20/2010	SHEET NO.
PROJECT NO.	D1177E	DRAWING NO.	D-1177E-001	3 OF 5

PHASE II
STATIONS 216+50 TO 224+50



PHASE I
STATIONS 224+50 TO 232+00



BENCHMARK:

GPS BASE STATION
ELEVATION: 27.521
DATUM: NAVD 29

NOTES:

1. THIS IS TO CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP OR PLAN IS THE RESULT OF A FIELD SURVEY PERFORMED ON DECEMBER 21, 2009 BY ENTACT. LLC, WITH PERIODIC FIELD SURVEY CHECKS PERFORMED BY MASER CONSULTING P.A. THE INFORMATION DEPICTED HEREON, CORRECTLY REPRESENTS THE CONDITIONS FOUND AT, AND AS OF THE DATE OF THE FIELD SURVEY, EXCEPT SUCH IMPROVEMENTS OR EASEMENTS, IF ANY BELOW THE SURFACE AND NOT VISIBLE. ACCORDINGLY THE UNDERSIGNED PROFESSIONAL IS NOT RESPONSIBLE FOR THE PRESENCE OF UNDERGROUND UTILITIES OR STRUCTURES, IF SAME ARE NOT VISIBLE OR OTHERWISE DISCLOSED BY ANY AFOREMENTIONED DATA LISTED ABOVE.

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4. SITE BENCHMARK USED: GPS BASE STATION – ELEVATION = 27.52
THE HORIZONTAL DATUM IS NAD83, THE VERTICAL DATUM IS NGVD29.

R. THOMAS HUGG
NEW JERSEY PROFESSIONAL
LAND SURVEYOR LIC. NO. 36737

LEGEND

- 12 — AS-BUILT POST EXCAVATION CONTOURS
- LIMITS OF EXCAVATION
- GAS LINES AND AS-BUILT POINTS
- SANITARY LINES AND AS-BUILT POINTS
- ELECTRIC LINES AND AS-BUILT POINTS
- WATER LINES AND AS-BUILT POINTS
- WELLS, MANHOLES, OTHER OBJECTS
- X 50043 POINT NUMBER FOR UTILITY LOCATIONS (SEET SHEET NO. 5 OF 5)

30 0 30 60
SCALE IN FEET
(1"=30')

REV	DATE	BY	CH'CD	APR'VD	DESCRIPTION
1.	3/30/10	D.J.M.	RTH		ADDITIONAL UTILITY LOCATIONS INCLUDED

ENTACT
339 Haymaker Rd., Suite 1101
Monroeville, PA 15146
P: 412-357-1100

DRAWING NAME: FINAL AS-BUILT DRAWINGS
DISCOVERED UTILITIES DRAWING

PROJECT NAME & LOCATION: HONEYWELL SAS / SITE 153
JERSEY CITY, NEW JERSEY

PREPARED BY	J. HOUGH	CHECKED BY	C. PANICO	REVISION
DRAWN BY	J. HOUGH	APPROVED BY	C. PANICO	1
DATE	2/9/2010	DATE	2/9/2010	SHEET NO.
PROJECT NO.	D1177E	DRAWING NO.	D-1177E-001	4 OF 5

GAS LINES

GAS LINE #1:
- VISIBLE IN EXCAVATION FROM STATION 221+30 TO 223+20
- 4" LINE WITH TRACE WIRE 6" ABOVE CROWN
- LOCATED WITHIN 3' CLEAN FILL ZONE

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION	NOTE/COMMENT
50051	683488.4039	603146.5691	8.29	4" GASLINE #1 INTO SLOPE	GASLINE #1 COMES OUT OF SLOPE ON
50052	683478.349	603151.273	8.23	4" GASLINE #1	NORTHWEST SIDE OF EXCAVATION
50053	683463.6195	603155.0406	8.31	4" GASLINE #1	
50054	683447.812	603159.084	8.38	4" GASLINE #1	
50055	683437.1068	603157.9731	8.41	4" GASLINE #1	
50056	683425.6486	603156.7842	8.68	4" GASLINE #1	
50057	683416.453	603155.83	8.832	4" GASLINE #1	
50058	683405.8789	603154.5975	8.75	4" GASLINE #1	
50059	683393.5769	603153.1636	8.89	4" GASLINE #1	
50060	683382.2877	603151.8477	8.8	4" GASLINE #1	
50061	683373.951	603150.876	8.54	4" GASLINE #1	
50062	683359.8873	603150.1129	8.6	4" GASLINE #1	
50064	683342.2666	603149.6365	8.59	4" GASLINE #1	
50065	683327.6294	603148.5062	8.51	4" GASLINE #1	
50066	683317.6308	603148.5589	8.7	4" GASLINE #1	
50067	683308.1043	603148.302	8.72	4" GASLINE #1	
50068	683301.887	603150.125	11.39	4" GASLINE #1 VALVE	
50069	683296.449	603147.947	8.43	4" GASLINE #1 ENDCAP	CAPPED AT SOUTH END
50072	682867.419	603146.705	10.79	GASLINE TRACE	

GAS LINE #2:
- VISIBLE IN EXCAVATION FROM STATION 216+50 TO 218+50
- 4" LINE WITH TRACE WIRE 6" ABOVE CROWN
- LOCATED WITHIN 3' CLEAN FILL ZONE
- GASLINE #2 RUNS BELOW GASLINE #3 UNTIL STATION 217+25 WHERE IT SPLITS OFF TO THE EAST

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION	NOTE/COMMENT
50000	683940.799	603308.148	9.04	216+50 CAP GAS?	GASMAIN #2 CONTINUES THROUGH NORTH END OF EXCAVATION
50002	683938.7242	603307.0748	6.1	4" GASMAIN #2	
50009	683927.4219	603301.2288	6.09	4" GASMAIN #2	
50012	683917.5805	603296.1384	6.07	4" GASMAIN #2	
50016	683906.5043	603290.4092	6.09	4" GASMAIN #2	
50019	683893.9144	603283.8972	6.01	4" GASMAIN #2	
50020	683876.5582	603274.9198	6.58	4" GASMAIN #2, #3 SPLIT	STOPPED BEING TOP/BOTTOM AND SEPARATED EAST TO WEST
50021	683861.2792	603268.103	6.6	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50022	683843.4816	603260.1915	6.53	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50023	683832.3049	603255.2209	6.52	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50024	683818.6752	603249.1594	6.51	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50025	683805.2821	603243.2031	6.55	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50026	683791.7164	603237.2329	6.55	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50027	683780.1735	603232.1861	6.56	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50034	683763.084	603223.842	5.7	4" GASMAIN #2 (BOTTOM) DEADEND	CAPPED AT SOUTH END

GAS LINE #3:
- VISIBLE IN EXCAVATION FROM STATION 216+50 TO 218+50
- 4" LINE WITH TRACE WIRE 6" ABOVE CROWN
- LOCATED WITHIN 3' CLEAN FILL ZONE
- GASLINE #3 RUNS ABOVE GASLINE #2 UNTIL STATION 217+25 WHERE GASLINE #2 SPLITS OFF TO THE EAST

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION	NOTE/COMMENT
50001	683939.6675	603303.6901	6.09	4" GASMAIN #3	GASMAIN #3 CONTINUES THROUGH NORTH END OF EXCAVATION
50008	683928.0039	603298.3728	6.07	4" GASMAIN #3	
50014	683916.6195	603293.1829	6.18	4" GASMAIN #3	
50017	683906.9606	603288.7796	6.21	4" GASMAIN #3	
50018	683894.0299	603282.8848	6.31	4" GASMAIN #3	
50020	683876.5582	603274.9198	6.58	4" GASMAIN #2, #3 SPLIT	STOPPED BEING TOP/BOTTOM AND SEPARATED EAST TO WEST
50021	683861.2792	603268.103	6.6	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50022	683843.4816	603260.1915	6.53	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50023	683832.3049	603255.2209	6.52	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50024	683818.6752	603249.1594	6.51	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50025	683805.2821	603243.2031	6.55	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50026	683791.7164	603237.2329	6.55	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50027	683780.1735	603232.1861	6.56	4" GASMAIN #3 (TOP), #2 (BOTTOM)	USE FOR LOCATION FOR BOTH #2 AND #3
50032	683768.7782	603224.4221	6.51	4" GASMAIN #3	
50033	683768.1088	603226.3949	6.51	4" GASMAIN #3 (TOP) 90 TO WEST	GASMAIN #3 COMES OUT OF WEST END OF SLOPE, 90 TO NORTH

GAS LINE VALVES:
- ALL VALVES LOCATED WERE AT THE START OF GASLINE VIEW AT STATION 218+50

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION	NOTE/COMMENT
50028	683772.502	603228.832	6.91	GAS VALVECAPS	
50029	683771.9	603228.625	6.87	GAS VALVECAPS	
50030	683768.4263	603225.5112	8.08	GAS VALVECAPS	
50031	683768.313	603225.862	7.22	GAS VALVECAPS	

BENCHMARK:

GPS BASE STATION
ELEVATION: 27.521
DATUM: NAVD 29

NOTES:

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4. SITE BENCHMARK USED: GPS BASE STATION – ELEVATION = 27.52
THE HORIZONTAL DATUM IS NAD83, THE VERTICAL DATUM IS NGVD29.

R. THOMAS HUGG
NEW JERSEY PROFESSIONAL
LAND SURVEYOR LIC. NO. 36737

WATER LINES

- VISIBLE IN EXCAVATION AT STATION 219+75
- 6" LINE LOCATED OUTSIDE OF EAST EXCAVATION SLOPE
- NOT LOCATED WITHIN ORIGINAL 3' CLEAN FILL ZONE, BUT EXCAVATED AND CLEAN–FILLED DUE TO RUPTURED LINE

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION	NOTE/COMMENT
50044	683646.3433	603202.5977	7.69	6" WATER LINE	
50047	683635.7567	603199.5078	7.49	6" WATER LINE	
50050	683631.71	603198.325	7.21	6" WATER LINE - REPAIR LOCATION	WATER LINE RUPTURED DURING EXCAVATION
50045	683643.369	603201.731	9.07	WATER LINE VENT CAP	
50046	683642.576	603201.807	10.09	WATERMAIN VALVE CAP	

SANITARY LINES

12" RCP STORM LINES:
- VISIBLE IN EXCAVATION NEAR STATION 216+75

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION	NOTE/COMMENT
50005	683926.702	603311.632	6.92	12" RCP SANITARY #1	
50013	683916.2332	603296.7493	6.89	12" RCP SANITARY #1	
50006	683927.771	603310.645	6.91	12" RCP SANITARY #2	
50011	683918.125	603297.0997	7.07	12" RCP SANITARY #2	

6" PVC SANITARY LINES:
- SANLINE #1 VISIBLE PERPENDICULAR WATER LINE AT 219+75
- SANLINE #2 IS VISIBLE PERPENDICULAR TO EXCAVATION AT 219+00
- SANLINES #3 AND #4 ARE VISIBLE NEAR STATION 216+75
- ALL LINES LOCATED WITHIN 3' CLEAN FILL ZONE

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION	NOTE/COMMENT
50048	683634.345	603198.23	7.67	6" SANITARY LINE #1 90 DOWN FROM BUILDING	
50049	683633.797	603202.1406	7.68	6" SANITARY LINE #1 FROM BUILDING	
50039	683722.0462	603205.564	7.21	6" SANITARY LINE #2	
50040	683703.1678	603223.7655	7.48	6" SANITARY LINE #2	
50010	683915.0549	603314.0375	7.54	6" SANITARY LINE #3	
50015	683909.7637	603293.674	6.79	6" SANITARY LINE #3	
50003	683934.5288	603299.4222	5.54	6" SANITARY LINE #4	
50007	683923.722	603314.618	7.15	6" SANITARY LINE #4	

ELECTRIC LINES

- VISIBLE IN EXCAVATION PERPENDICULAR TO EXCAVATION AT STATION 218+75
- LOCATED WITHIN 3' CLEAN FILL ZONE,

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION	NOTE/COMMENT
50035	683727.458	603232.0212	7.66	ELECTRIC LINE 1	
50037	683735.4818	603210.9427	7.26	ELECTRIC LINE 1	
50036	683728.4695	603232.3838	7.11	ELECTRIC LINE 2	
50038	683736.2179	603211.2654	7.1	ELECTRIC LINE 2	

MISC UTILITIES AND ITEMS

- VISIBLE IN EXCAVATION PERPENDICULAR TO EXCAVATION AT STATION 218+75
- ALL LOCATED WITHIN OR ABOVE 3' CLEAN FILL ZONE,

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION	NOTE/COMMENT
50063	683366.047	603148.971	11.74	153-MW-A15	MW HIT IN EXCAVATION PROGRESS
50041	683678.101	603212.934	9.91	MW	
50042	683671.178	603210.828	9.8	MW	
50075	682650.906	603169.621	8.27	12" PVC VERTICAL UNKNOWN	
50076	682503.5021	603173.4835	8.34	CONCRETE SLAB	STATION 231+25
50077	682496.608	603173.338	8.32	CONCRETE SLAB	
50078	682490.813	603172.948	8.23	CONCRETE SLAB	
50079	682491.666	603168.722	8.41	CONCRETE SLAB	
50080	682496.379	603168.843	8.55	CONCRETE SLAB	
50081	682503.217	603168.543	8.21	CONCRETE SLAB	
50082	682485.554	603172.823	8.2	CONCRETE SLAB	
50083	682486.03	603168.28	8.22	CONCRETE SLAB	
50073	682725.2195	603150.8424	10.94	ELECTRIC PULLBOX	ELEC LINE NOT IN EXCAVATED AREA
50043	683662.772	603209.23	9.63	LIGHTPOLE BASE	
50074	682670.8563	603154.8473	10.28	LIGHTPOLE BASE	
50084	682442.096	603164.631	11.68	MH #1	STATION 231+75
50071	682971.545	603140.326	12.17	MH #2	STATION 225+00
50070	683124.472	603135.841	12.06	MH #3	STATION 226+50
50004	683931.249	603314.674	9.83	MH #4	STATION 216+50
50085	683928,1	603323,3	10,3	MANHOLE	CAP LIMIT NORTH OF GARFIELD BUILDING
50086	683529,3	603177,5	10,214	MANHOLE	CAP LIMIT SOUTHWEST OF GARFIELD BUILDING
50087	682505,7	603159,2	10,793	MANHOLE	22" S.H.D.
50088	682472,1	603170,6	15,075	MANHOLE	48" B.M.U.A. MAIN

REV	DATE	BY	CH'K'D	APR'VD	DESCRIPTION
1.	3/30/10	D.J.M.	RTH		ADDITIONAL UTILITY LOCATIONS INCLUDED

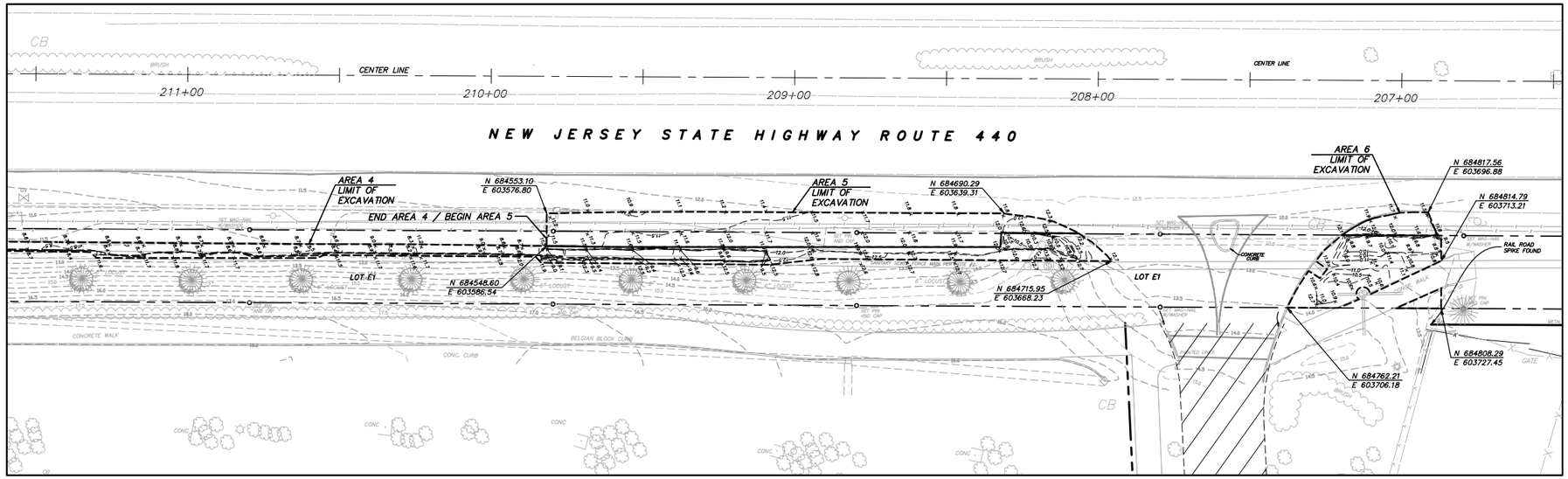
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339 Haymaker Rd., Suite 1101
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P: 412-357-1100

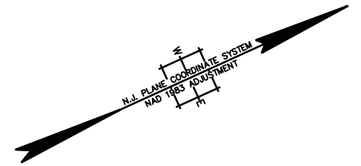
DRAWING NAME	FINAL AS-BUILT DRAWINGS DISCOVERED UTILITIES LIST
PROJECT NAME & LOCATION	HONEYWELL SAS / SITE 153 JERSEY CITY, NEW JERSEY

PREPARED BY	J. HOUGH	CHECKED BY	C. PANICO
DRAWN BY	J. HOUGH	APPROVED BY	C. PANICO
DATE	2/9/2010	DATE	2/9/2010
PROJECT NO.	D1177E	DRAWING NO.	D-1177E-001

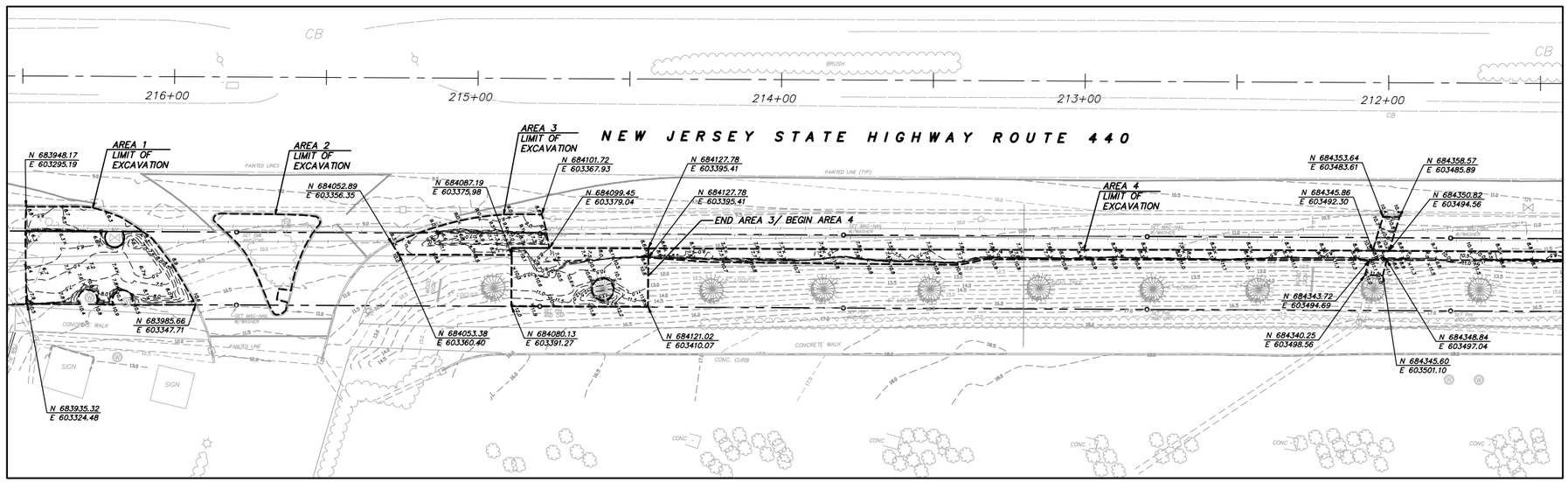
REVISION: 1
SHEET NO.: 5 OF 5

STATION 206+50 TO 211+50





STATION 211+50 TO 215+50



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BENCHMARK:

GPS BASE STATION
ELEVATION: 27.521
DATUM: NAVD 29

LEGEND

12 — AS-BUILT POST EXCAVATION CONTOURS
— — — LIMITS OF EXCAVATION

20 0 20 40
SCALE IN FEET
(1"=20')

REV.	DATE	DRAWN BY	DESCRIPTION
1.	1/3/2012	BSB	REV. PER ENG. REVIEW COMMENTS DATED 11/29/11

R. THOMAS HUGG
NEW JERSEY PROFESSIONAL
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MASER CONSULTING P.A.
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State of N.J. Certificate of Authorization: 24GA27986500

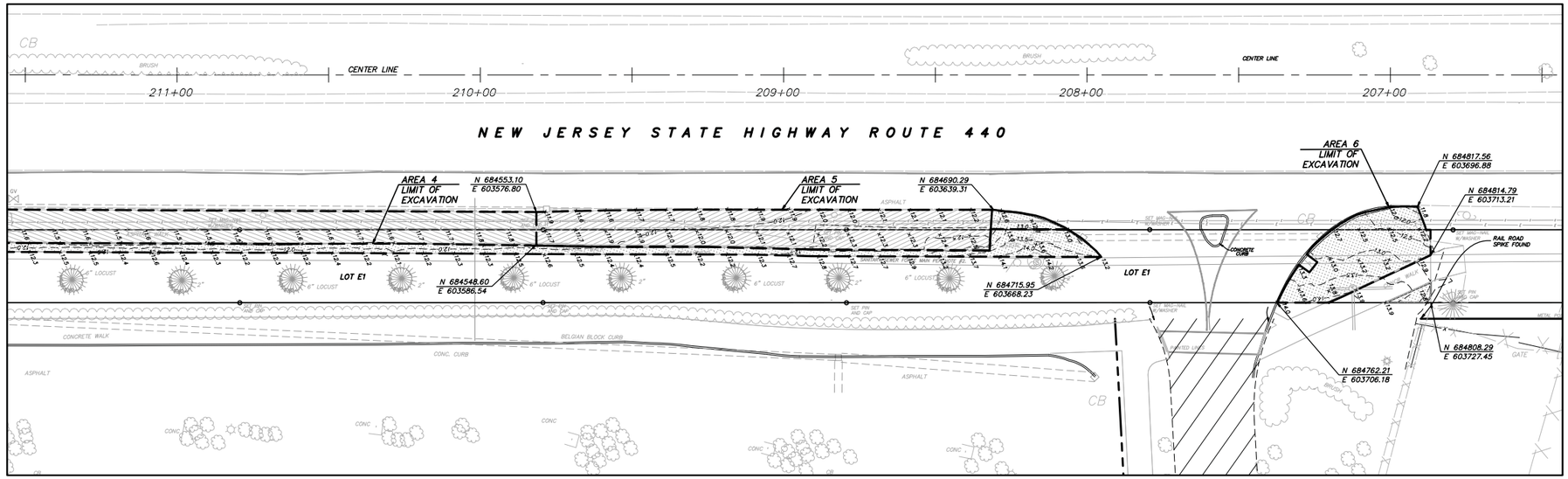
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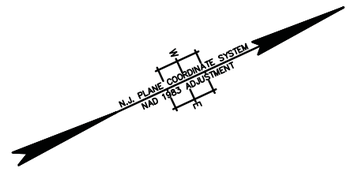
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FINAL AS-BUILT CONTOUR DRAWING
POST-EXCAVATION SURFACE
HONEYWELL AREA 5 SITE 153
SOUTH UPPER SEGMENT
JERSEY CITY
HUDSON COUNTY NEW JERSEY

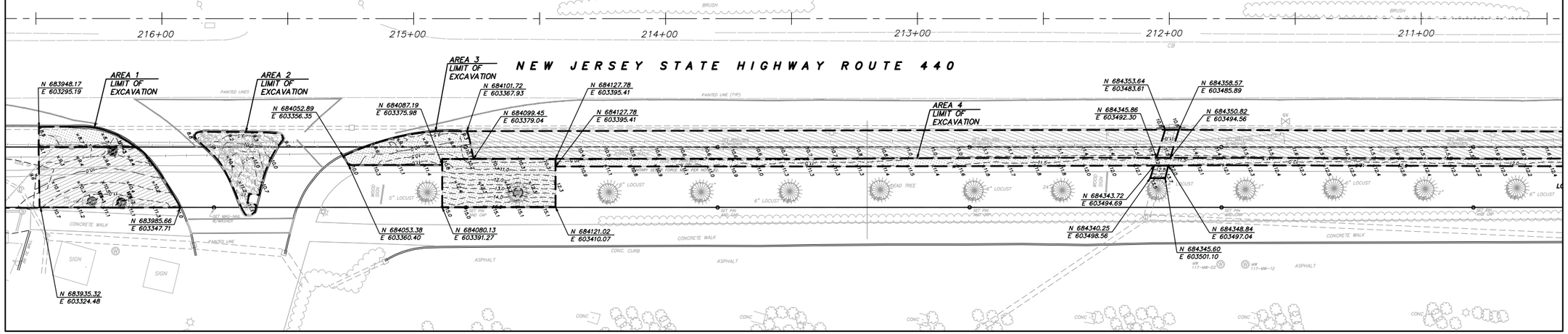
JOB NUMBER: 11000810A	DATE: OCT. 28. 2011
SCALE: 1"=20'	LATEST REVISION: JAN. 3, 2012
INDEX NUMBER: RBSU015980	DESIGN BY: MRM
SHEET NUMBER: 1 of 1	

STATION 206+50 TO 211+50





STATION 211+50 TO 215+50



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BENCHMARK:

GPS BASE STATION
ELEVATION: 27.521
DATUM: NAVD 29

LEGEND

- 12 — AS-BUILT FINISH GRADE CONTOURS
- LIMITS OF EXCAVATION
- AS-BUILT SOIL AND GRASS AREAS
- AS-BUILT 6" ASPHALT AREAS
- AS-BUILT 2" ASPHALT AREAS

20 0 20 40
SCALE IN FEET
(1"=20')

REV.	DATE	DRAWN BY	DESCRIPTION
2.	1/3/2012	BSB	REV. PER ENG. REVIEW COMMENTS DATED 11/29/11
1.	12/1/11	RTH	REVISIONS TO SHOW AS-BUILT AREAS AND TYPES

R. THOMAS HUGG
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LAND SURVEYOR LIC. NO. 36737

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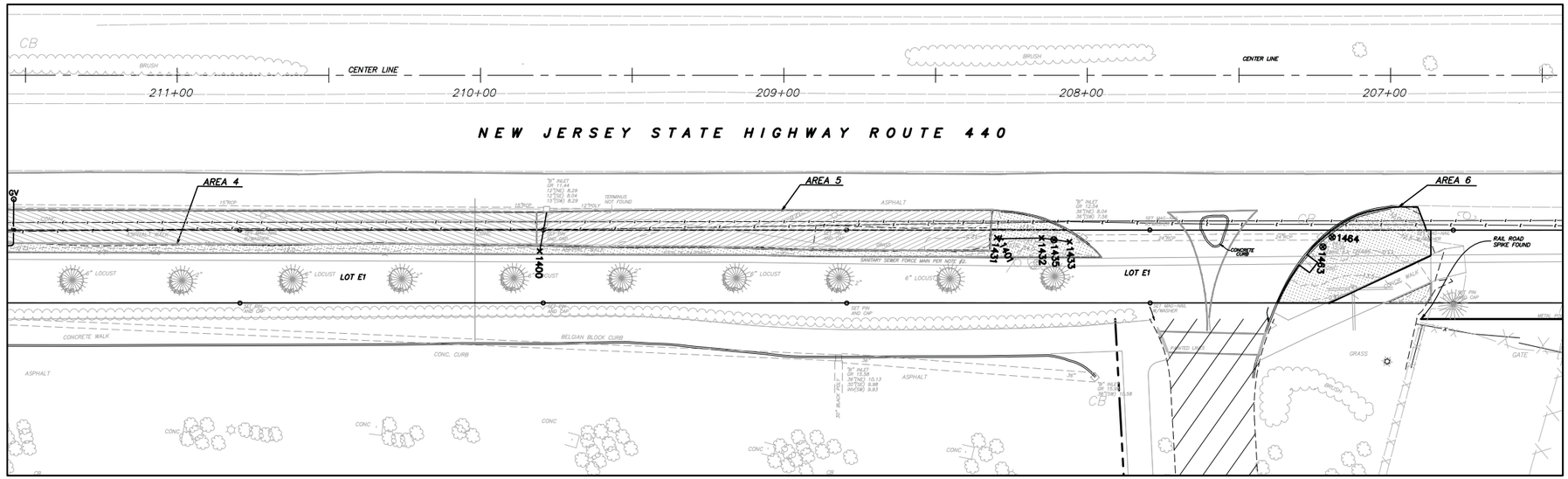
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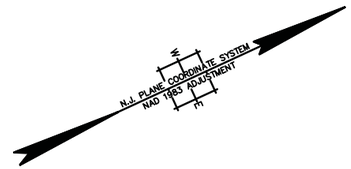
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FINAL AS-BUILT CONTOUR DRAWING
AND SITE RESTORATION
HONEYWELL AREA 5 SITE 153
SOUTH UPPER SEGMENT
JERSEY CITY
HUDSON COUNTY NEW JERSEY

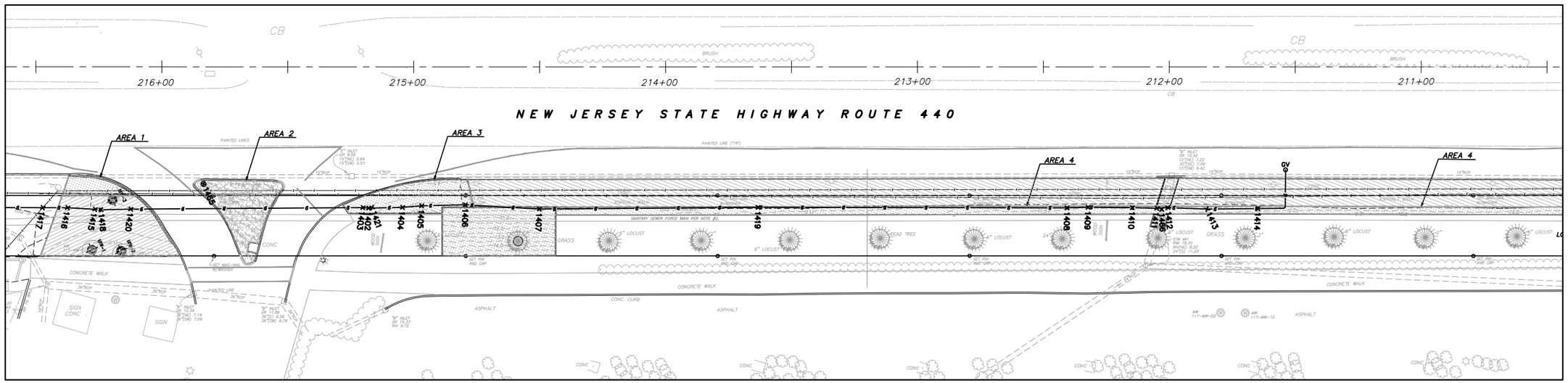
JOB NUMBER: 11000810A	DATE: SEPT. 12. 2011
SCALE: 1"=20'	LATEST REVISION: JAN. 3, 2012
INDEX NUMBER: RBSU016153	DESIGN BY: MRM
SHEET NUMBER: 1 of 1	

STATION 206+50 TO 211+50





STATION 211+50 TO 215+50



GAS LINE CHART

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1402	684061.58	603361.87	8.53	6" HDPE Gas Tracer 6" Offset above
1403	684059.60	603360.73	8.39	6" HDPE Gas Tracer 6" Offset above
1404	684073.91	603367.24	8.59	6" HDPE Gas Tracer 6" Offset above
1405	684081.08	603369.88	8.17	6" HDPE Gas Tracer 6" Offset above
1406	684096.98	603376.75	8.46	6" HDPE Gas Tracer 6" Offset above
1407	684122.97	603390.63	8.44	6" HDPE Gas Tracer 6" Offset above
1408	684313.37	603478.01	8.50	6" HDPE Gas Tracer 6" Offset above
1409	684321.04	603481.28	8.99	6" HDPE Gas Tracer 6" Offset above
1410	684336.95	603488.79	8.59	6" HDPE Gas Tracer 6" Offset above
1411	684345.69	603493.11	8.54	6" HDPE Gas Tracer 6" Offset above
1412	684349.76	603494.68	8.69	6" HDPE Gas Tracer 6" Offset above
1413	684363.62	603501.72	9.66	6" HDPE Gas Tracer 6" Offset above
1414	684382.04	603510.01	9.58	6" HDPE Gas Tracer 6" Offset above
1415	683962.73	603316.76	7.31	6" HDPE Gas Tracer 6" Offset above
1416	683953.12	603311.62	8.36	6" HDPE Gas Tracer 6" Offset above
1417	683944.16	603307.49	8.37	6" HDPE Gas Tracer 6" Offset above
1418	683964.77	603317.92	7.42	6" HDPE Gas Tracer 6" Offset above
1419	684202.07	603426.38	7.52	6" HDPE Gas Tracer 6" Offset above
1420	683975.67	603322.65	7.41	6" HDPE Gas Tracer 6" Offset above
1421	684062.96	603362.29	7.24	6" HDPE GAS

STORM CHART

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1400	684548.69	603588.86	9.64	18" RCP Top of Pipe
1401	684688.26	603648.72	10.38	36" Currogated HDPE STORM Top
1431	684687.30	603648.00	10.47	A5 36" Currogated HDPE STORM Top
1432	684700.69	603654.24	10.45	A5 36" Currogated HDPE STORM Top
1433	684708.56	603659.24	11.94	A5 36" Currogated HDPE STORM Top
1435	684704.13	603656.48	12.71	A5 STORM MANHOLE
1463	684783.68	603695.71	11.68	A6 DRAIN Box Manhole
1464	684787.80	603694.11	11.67	A6 DRAIN Box Manhole
1465	684006.07	603325.68	9.12	STORM MANHOLE
1466	684347.19	603494.29	10.25	STORM SEWER HDPE

NOTES:

1. THIS IS TO CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP OR PLAN IS THE RESULT OF A FIELD SURVEY PERFORMED ON OCTOBER 18, 2011 BY ENTACT. THE INFORMATION DEPICTED HEREON, CORRECTLY REPRESENTS THE CONDITIONS FOUND AT, AND AS OF THE DATE OF THE FIELD SURVEY, EXCEPT SUCH IMPROVEMENTS OR EASEMENTS, IF ANY BELOW THE SURFACE AND NOT VISIBLE. ACCORDINGLY THE UNDERSIGNED PROFESSIONAL IS NOT RESPONSIBLE FOR THE PRESENCE OF UNDERGROUND UTILITIES OR STRUCTURES, IF SAME ARE NOT VISIBLE OR OTHERWISE DISCLOSED BY ANY AFOREMENTIONED DATA LISTED ABOVE.
2. THIS PLAN IS MADE FOR AND CERTIFIED TO THE PARTIES NAMED HEREON FOR THE PURPOSE(S) STATED. NO OTHER PURPOSE IS INTENDED NOR IMPLIED. THE UNDERSIGNED PROFESSIONALS ARE NEITHER RESPONSIBLE NOR LIABLE FOR THE USE OF THIS PLAN BEYOND ITS INTENDED PURPOSE.
3. THE USE OF THE WORD "CERTIFY" OR "CERTIFICATION" CONSTITUTES AN EXPRESSION OF PROFESSIONAL OPINION REGARDING THOSE FACTS OR FINDINGS WHICH ARE THE SUBJECT OF THE UNDERSIGNED PROFESSIONAL'S KNOWLEDGE, INFORMATION, AND BELIEF, AND IN ACCORDANCE WITH THE COMMONLY ACCEPTED PROCEDURE CONSISTENT WITH THE APPLICABLE STANDARDS OF PRACTICE, AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE EITHER EXPRESSED OR IMPLIED.
4. SITE BENCHMARK USED: GPS BASE STATION – ELEVATION = 27.52 THE HORIZONTAL DATUM IS NAD83, THE VERTICAL DATUM IS NGVD29.

BENCHMARK:

GPS BASE STATION
ELEVATION: 27.521
DATUM: NAVD 29

LEGEND

- 12 — AS-BUILT FINISH GRADE CONTOURS
- LIMITS OF EXCAVATION
- AS-BUILT SOIL AND GRASS AREAS
- AS-BUILT 6" ASPHALT AREAS
- AS-BUILT 2" ASPHALT AREAS

20 0 20 40
SCALE IN FEET
(1"=20')

REV.	DATE	DRAWN BY	DESCRIPTION

R. THOMAS HUGG
NEW JERSEY PROFESSIONAL
LAND SURVEYOR LIC. NO. 36737

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ■ Surveyors ■ Landscape Architects
State of N.J. Certificate of Authorization: 24GA27986500

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1984
email: solutions @ maserconsulting.com

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Newburgh, N.Y.
Bethlehem, PA.

FINAL AS-BUILT CONTOUR DRAWING
DISCOVERED UTILITIES DRAWING
HONEYWELL AREA 5 SITE 153
SOUTH UPPER SEGMENT
JERSEY CITY
HUDSON COUNTY NEW JERSEY

JOB NUMBER: 11000810A	DATE: DEC. 1. 2011
SCALE: 1"=20'	LATEST REVISION:
INDEX NUMBER: RBSU016300	DESIGN BY: MRM
SHEET NUMBER: 1 of 1	

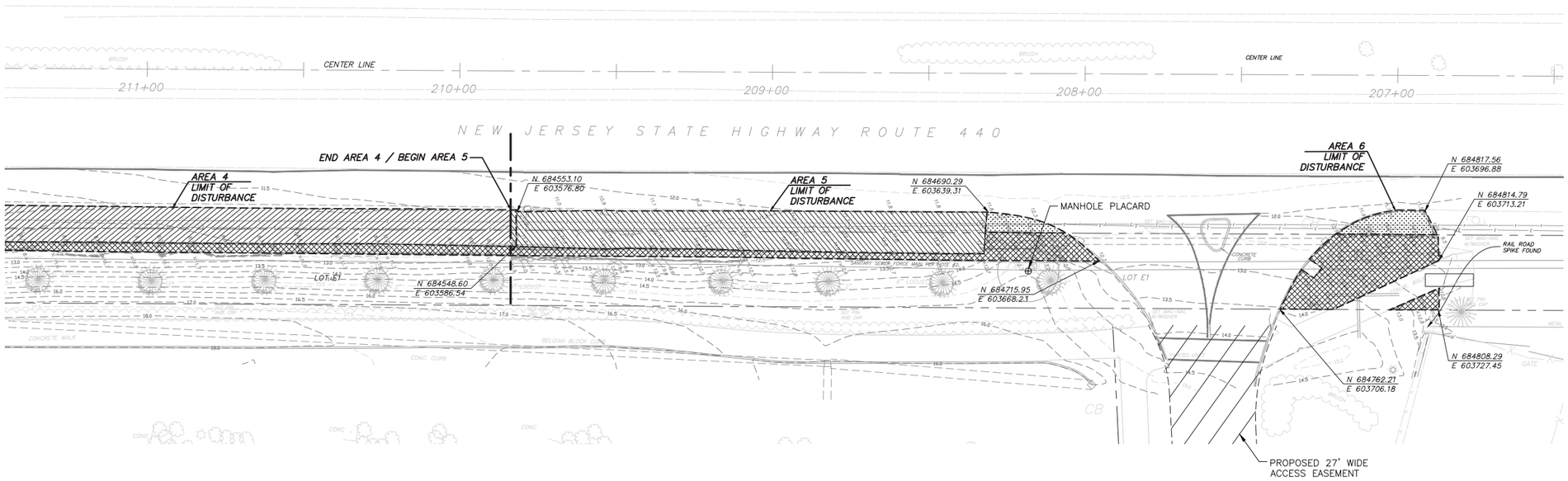
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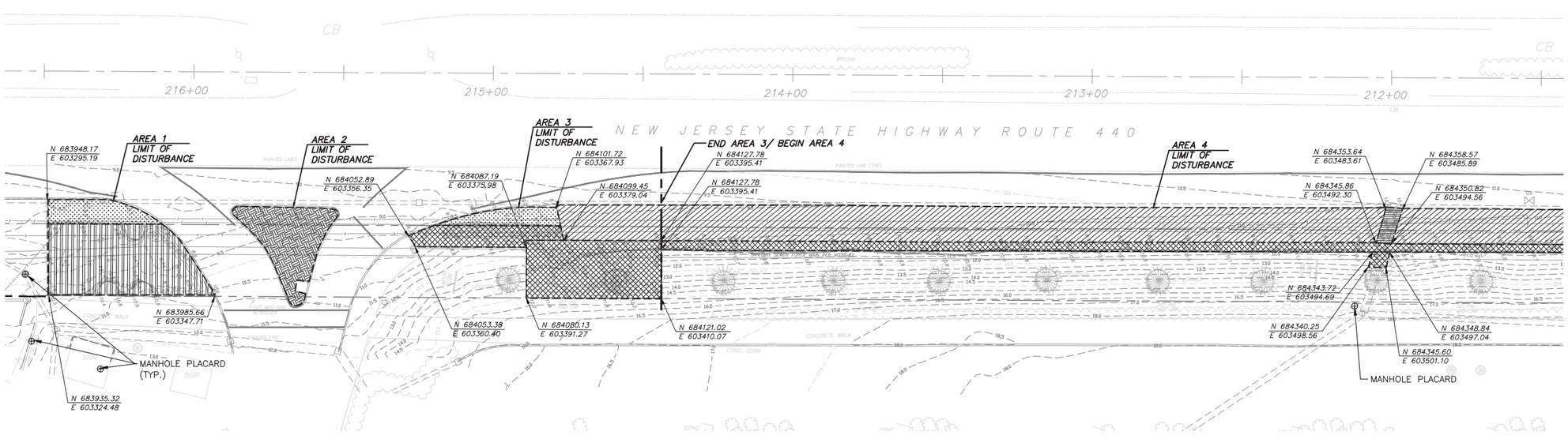
LEGEND:

- 6" VEGETATIVE RESTORATION – NJDOT R.O.W.
- 3' EXCAVATION – VEGETATIVE CAP
- 3' EXCAVATION – ASPHALT CAP
- 1' TOPSOIL RESTORATION
- 2" MILLING/REPLACEMENT – ASPHALT CAP
- 1' ASPHALT RESTORATION
- 6" ASPHALT RESTORATION
- ⊕ MANHOLE WARNING PLACARD LOCATION

STATION 206+50 TO 211+50



STATION 211+50 TO 215+50



0 10 20 40
SCALE IN FEET

REV.	DATE	STATUS	PRPD BY	CHKD BY

AMEC PROJECT No. 3480120310
DRAWING: 3480120310-6100-IRM-RTC-0000

PREPARED/DATE: DL 10/3/12

CHECKED/DATE: EGC 10/9/12

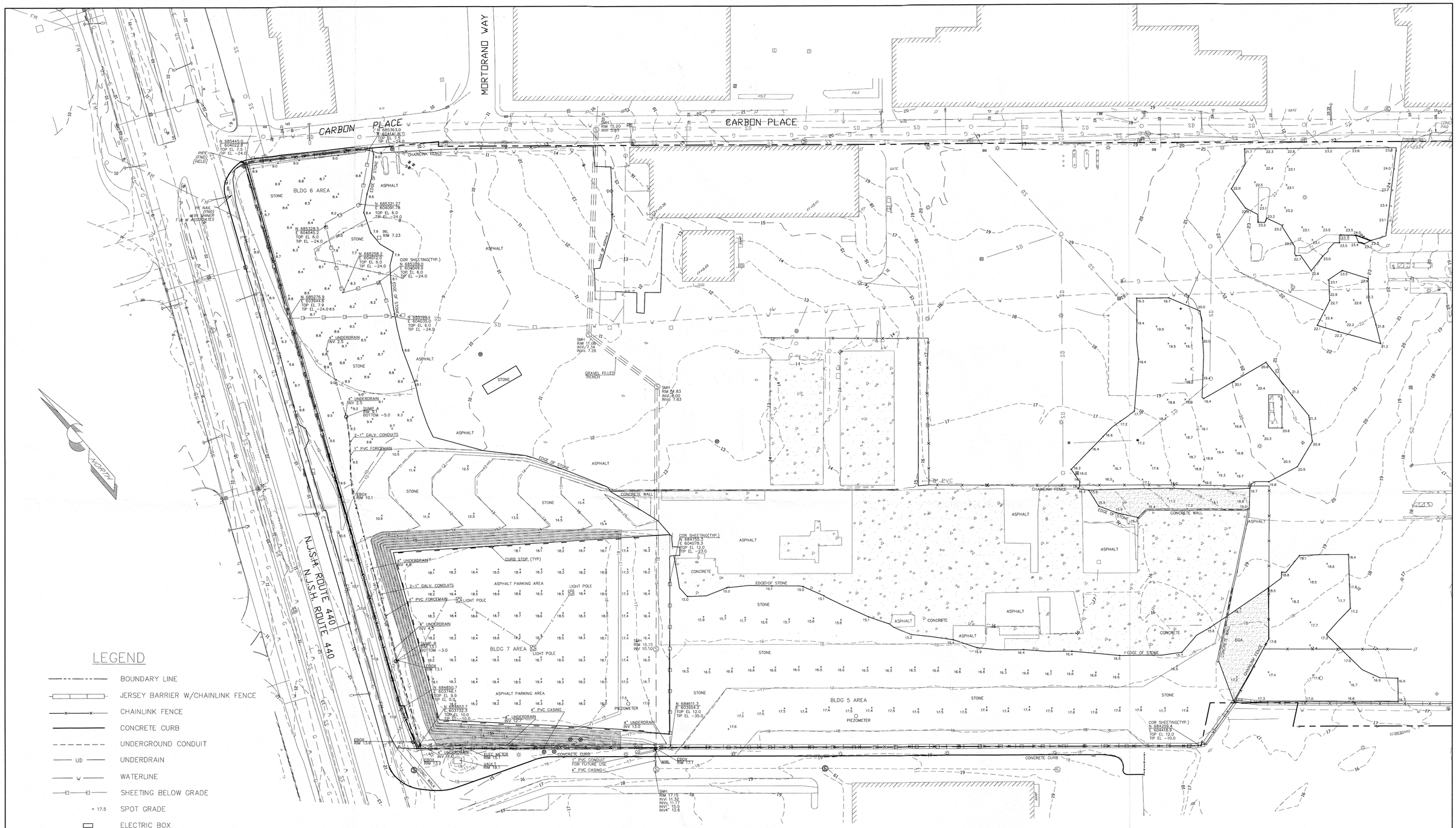
amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

FIGURE 3
EXCAVATION AND ASPHALT RESTORATION OF INTERIM REMEDIAL ACTIONS
SA-5 SITE 153 SOUTH UPPER SEGMENT
JERSEY CITY, NEW JERSEY

P:\CADD\HONEYWELL\JERSEY CITY\SA 5\SITE 153\3480120310\6100\3480120310-6100-IRM-RTC-0000.dwg Tue, 09 Oct 2012 - 3:27pm david.leech Layout: Layout

APPENDIX B-2

NJCU CHROMIUM REMEDY
AS-BUILT FIGURES



LEGEND

- BOUNDARY LINE
- JERSEY BARRIER W/CHAINLINK FENCE
- CHAINLINK FENCE
- CONCRETE CURB
- UNDERGROUND CONDUIT
- UD — UNDERDRAIN
- W — WATERLINE
- SHEETING BELOW GRADE
- × 17.5 — SPOT GRADE
- ELECTRIC BOX
- SANITARY SEWER MANHOLE
- MONITOR WELL
- INLET
- TOPSOIL/SEEDED AREA
- CONCRETE AREA
- CURB STOP

NOTES

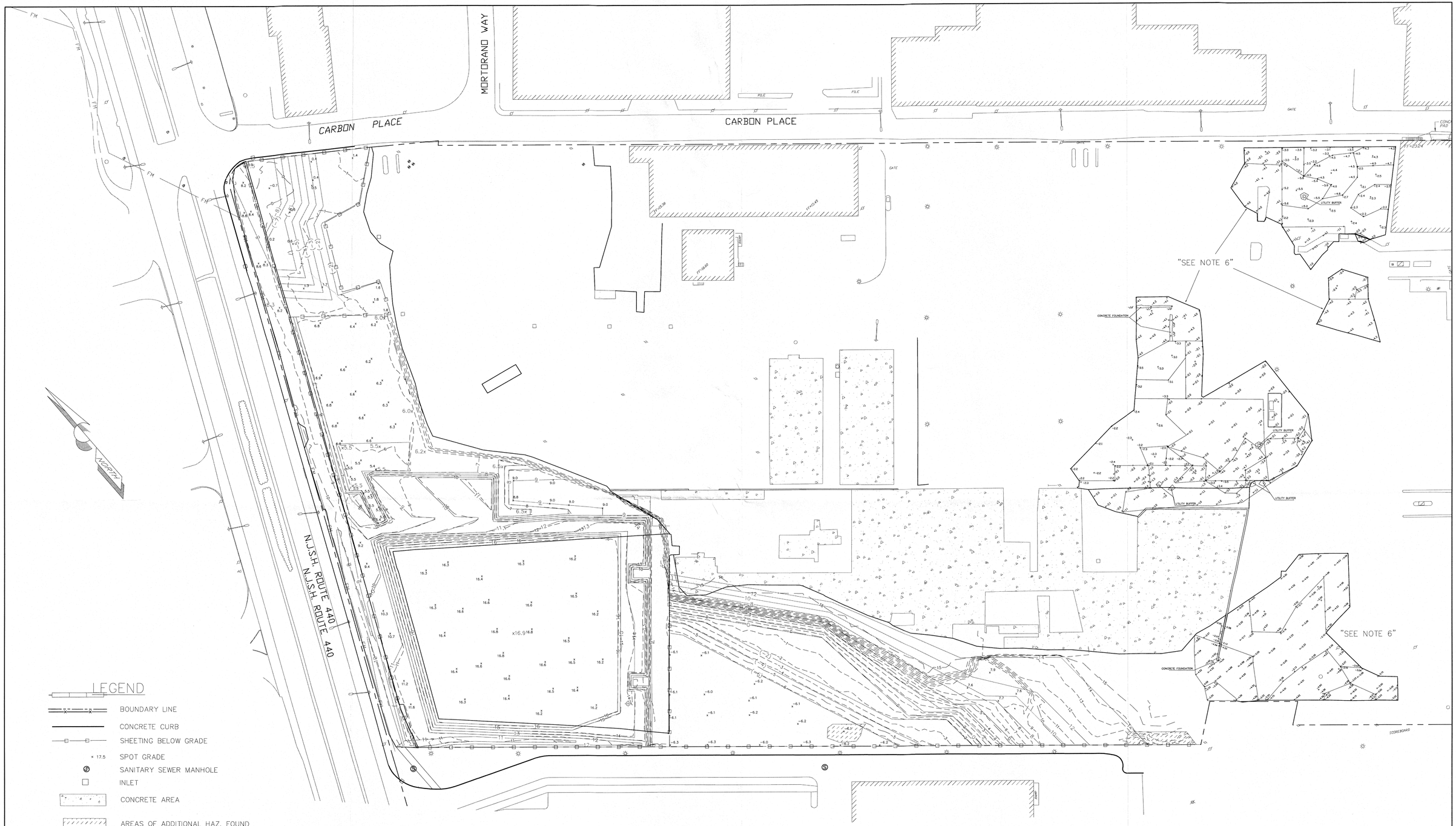
1. THIS MAP WAS PREPARED TO SHOW THE AS-BUILT CONDITIONS OF THE SITE POST CONSTRUCTION. THIS MAP WAS CREATED FROM FIELD MEASUREMENTS PERFORMED BY THIS FIRM THROUGH 12-22-11.
2. HORIZONTAL DATUM NAD 83, VERTICAL DATUM NGVD 29.
3. BOUNDARY LINE, AND BACKGROUND INFORMATION SHOWN HEREON OUTSIDE OF THE SURVEY LIMITS FROM PLANS ENTITLED "EXISTING CONDITIONS" PREPARED BY MACTEC LAST REVISED 05-06-10.
4. CONTOURS SHOWN HEREON IN A DASHED LINE TYPE REPRESENT THE ASBUILT AND EXISTING CONDITIONS. AND THE CONTOURS SHOWN IN A SOLID LINE TYPE REPRESENT THE PROPOSED FINAL GRADE AS SHOWN ON MACTEC DESIGN PLANS ENTITLED "POST CHROMIUM REMEDIATION GRADING AND DRAINAGE PLAN, ADDENDUM 3".

KENNY L. KENNON, P.L.S.
PROFESSIONAL LAND SURVEYOR LICENSE NO. 37195
DATE: 1-13-12

AS-BUILT SURVEY
"FINAL EXISTING CONDITIONS"
BLOCK 1286.5, LOT 1 & BLOCK 1286, LOT 5
JERSEY CITY, NEW JERSEY
HONEYWELL SITE ID 37288, 37811 & 37460

KSS KENNON SURVEYING SERVICES INC.
5 POWDER HORN DRIVE, SUITE 4
P.O. BOX 4477
WARREN, NEW JERSEY 07059
PHONE 732-564-1818 CERTIFICATE OF AUTHORIZATION NO. 27944900 FAX 732-564-9999

date	scale	proj. no.	sheet
01-13-12	1" = 50'	2201	1 OF 2



LEGEND

- BOUNDARY LINE
- CONCRETE CURB
- SHEETING BELOW GRADE
- × 17.5 SPOT GRADE
- Ⓢ SANITARY SEWER MANHOLE
- □ INLET
- CONCRETE AREA
- AREAS OF ADDITIONAL HAZ. FOUND

NOTES

1. THIS MAP WAS PREPARED TO SHOW THE AS–BUILT CONDITIONS OF THE BOTTOM OF EXCAVATION.
2. HORIZONTAL DATUM NAD 83, VERTICAL DATUM NGVD 29.
3. BOUNDARY LINE, AND BACKGROUND INFORMATION SHOWN HEREON OUTSIDE OF THE SURVEY LIMITS FROM PLANS ENTITLED "EXISTING CONDITIONS" PREPARED BY MACTEC LAST REVISED 05–06–10.
4. CONTOURS SHOWN HEREON IN A DASHED LINE TYPE REPRESENT THE ASBUILT SUBGRADE. AND THE CONTOURS SHOWN IN A SOLID LINE TYPE REPRESENT THE PROPOSED SUBGRADE AS SHOWN ON MACTEC DESIGN PLANS ENTITLED "SOIL EXCAVATION PLAN", DATED 05–06–10, (FOR BUILDING 5 & 6) AND "MACTEC–CSP02 ADDNM15 SG–NO PILE –DRAFT FOR PLAINTIFF REVIEW", DATED 04–14–11, (BUILDING 7).
5. EXCAVATION DEPTHS FOR BUILDING 6 AREA WERE LIMITED BY THE EXISTING "MEADOW MAT SYSTEM".
6. SPOT GRADES SHOWN IN THE JERSEY CITY UNIVERSITY PARKING LOT REPRESENT THE DEPTH OF EXCAVATION.

KENNY L. KENNON, P.L.S.
PROFESSIONAL LAND SURVEYOR LICENSE NO. 37195
DATE: 1-13-12

AS–BUILT SURVEY
"SUB–GRADE"
BLOCK 1286.5, LOT 1 & BLOCK 1286, LOT 5
JERSEY CITY, NEW JERSEY
HONEYWELL SITE ID 37288, 37811 & 37460

KSS KENNON SURVEYING SERVICES INC.
5 POWDER HORN DRIVE, SUITE 4
P.O. BOX 4477
WARREN, NEW JERSEY 07059
PHONE 732–564–1818 CERTIFICATE OF AUTHORIZATION NO. 27944900 FAX 732–564–9999

date	scale	proj. no.	sheet
01–13–12	1" = 50'	2201	2 OF 2

N

685131.22
603890.21

685064.35
603967.47

685055.43
603963.50

CAP LIMIT

STEGMAN CORRIDOR

684970.91
604040.33

FUTURE
CURB LINE

684888.84
604083.96

684829.08
604108.19

STEGMAN BOULEVARD
(110 FT R.O.W.)

33'

85'

20.00'

684823.52
604110.79

685078.88
603865.38

685069.12
603876.99

685051.18
603932.24

684979.27
604009.22

685027.51
603865.66

685025.01
603874.83

684941.85
603976.83

684929.96
603990.61

684918.77
604005.69

684863.24
604068.72

684778.43
604071.75

684792.70
604055.17

684785.17
604048.60

684770.78
604065.13

684802.80
604119.31

PROPOSED
PROPERTY
LINE (TYP)

BUILDING 7

EXISTING ROUTE 440
(112 FT R.O.W.)

EXISTING
SHEETPILE (TYP)

MALLORY WEST STREET
(85 FT R.O.W.)

MALLORY CORRIDOR

684684.88
603990.74

684699.50
603973.88

PROPOSED BUILDING
OUTLINE (TYP)

684691.95
603967.31

SOUTH ROAD
(60 FT R.O.W.)

684677.32
603984.19

684623.83
603937.88

684610.74
603953.00

Prepared/Date: RJR 07/12/11
Checked/Date: SGS 07/12/11

0 25 50 100
SCALE IN FEET

HONEYWELL SA-5
JERSEY CITY, NEW JERSEY

MACTEC

CURRENT STEGMAN AND MALLORY
UTILITY CORRIDORS WITHIN CAP AREA
PROJECT 3480-06-0208

M:\Projects\HONEYWELL\SA-5 Design\Figure - Legal Utility Corridor Current.dwg Tue, 12 Jul 2011 - 4:30pm rjriquier

LEGEND

P-##	PANEL IDENTIFICATION NUMBER
	APPROXIMATE LOCATION OF LINER LIMIT
	APPROXIMATE GCL LIMIT
104	REPAIR LOCATION
2.0 ft 2 ft	DESTRUCT LOCATION

STATUS	DATE

29 Arbutus Road
Johnson City, NY 13790
Phone 607.729.8500
Fax 607.729.2415

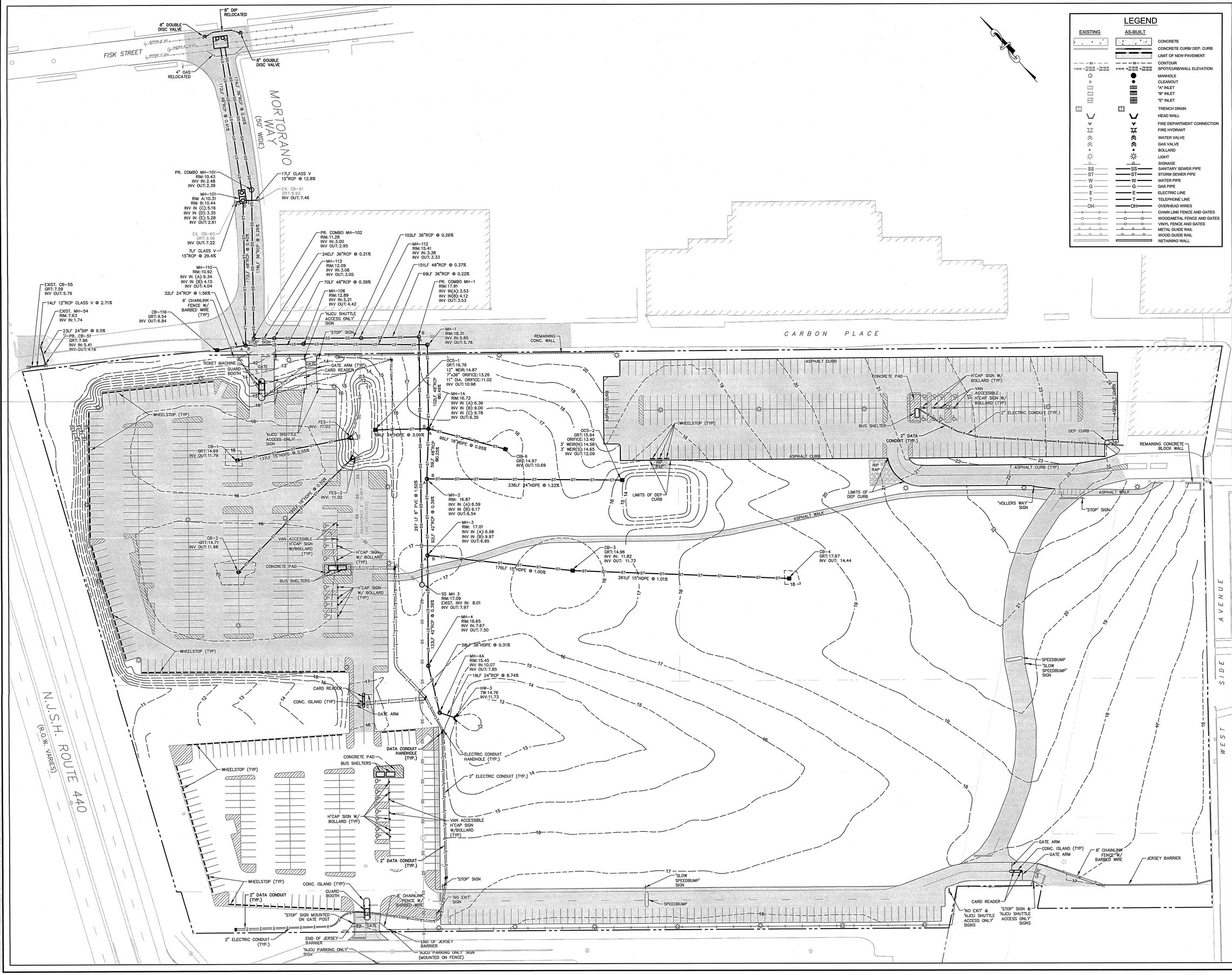
GEOMEMBRANE RECORD DRAWING

HONEYWELL JERSEY CITY
JERSEY CITY, NEW JERSEY

PROJECT NO.: 10039	SCALE: 1"=60'	DRAWN BY: PRM		SHEET: 1 OF 1

APPENDIX C

NJCU COMMERCIAL AREA REDEVELOPMENT
AS-BUILT FIGURES



LEGEND

EXISTING	AS-BUILT	
		CONCRETE
		CONCRETE CURB/ DEP. CURB
		LIMIT OF NEW PAVEMENT
99	99	CONTOUR
X 00.00	X 00.00 TW 00.00 INV 00.00	SPOT/CURB/WALL ELEVATION
		MANHOLE
		CLEANOUT
		"A" INLET
		"B" INLET
		"E" INLET
		TRENCH DRAIN
		HEAD WALL
		FIRE DEPARTMENT CONNECTION
		FIRE HYDRANT
		WATER VALVE
		GAS VALVE
		BOLLARD
		LIGHT
		SIGNAGE
SS	SS	SANITARY SEWER PIPE
ST	ST	STORM SEWER PIPE
W	W	WATER PIPE
G	G	GAS PIPE
E	E	ELECTRIC LINE
T	T	TELEPHONE LINE
OH	OH	OVERHEAD WIRES
X X	X X	CHAIN LINK FENCE AND GATES
		WOOD/METAL FENCE AND GATES
		VINYL FENCE AND GATES
		METAL GUIDE RAIL
		WOOD GUIDE RAIL
		RETAINING WALL

VOLLERS
EXCAVATING & CONSTRUCTION, INC.
3311 Route 22 East
North Branch, NJ 08876
Phone: 908-725-1026
Fax: 908-725-9784
www.VollersExcavating.com

JEFFREY O. MALES

NEW JERSEY LICENSED PROFESSIONAL ENGINEER

N.J.P.E.LIC.NO. GE50087

Notes:

1. AS-BUILT INFORMATION AS SHOWN IS PER SURVEY INFORMATION AS COLLECTED IN FIELD AND SITE SUPERVISOR'S FIELD NOTES.
2. ALL EXISTING INFORMATION SHOWN IS PER CAD FILE SUPPLIED BY OWNER AND IS FOR REFERENCE ONLY.

Revisions

No.	Description	Date

VOLLERS
EXCAVATING & CONSTRUCTION, INC.
3311 Route 22 East
North Branch, NJ 08876
Phone: 908-725-1026
Fax: 908-725-9784
www.VollersExcavating.com

Date:	AUGUST 11, 2014
Job Number:	2821
Drawn By:	KEW
Revised By:	
Checked By:	JAE

Graphic Scale:

40 20 0 40

1 INCH = 40 FEET

Project Title:

JERSEY CITY UNIVERSITY
WEST CAMPUS
JERSEY CITY, NEW JERSEY

Drawing Title:

FINAL ASBUILT

Rev. No.	Sheet:
0	1/1

APPENDIX D

NJCU COMMERCIAL AREA
UTILITY CORRIDOR FIGURES

N

685131.22
603890.21

685064.35
603967.47

685055.43
603963.50

CAP LIMIT

STEGMAN CORRIDOR

684970.91
604040.33

FUTURE
CURB LINE

684888.84
604083.96

684829.08
604108.19

STEGMAN BOULEVARD
(110 FT R.O.W.)

33'

85'

20.00'

684823.52
604110.79

685078.88
603865.38

685069.12
603876.99

685051.18
603932.24

684979.27
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685027.51
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684929.96
603990.61

684918.77
604005.69

684863.24
604068.72

684778.43
604071.75

684792.70
604055.17

684785.17
604048.60

684770.78
604065.13

684802.80
604119.31

PROPOSED
PROPERTY
LINE (TYP)

BUILDING 7

EXISTING ROUTE 440
(112 FT R.O.W.)

EXISTING
SHEETPILE (TYP)

MALLORY WEST STREET
(85 FT R.O.W.)

MALLORY CORRIDOR

684684.88
603990.74

684699.50
603973.88

PROPOSED BUILDING
OUTLINE (TYP)

684691.95
603967.31

SOUTH ROAD
(60 FT R.O.W.)

684677.32
603984.19

684623.83
603937.88

684610.74
603953.00

Prepared/Date: RJR 07/12/11
Checked/Date: SGS 07/12/11

0 25 50 100
SCALE IN FEET

HONEYWELL SA-5
JERSEY CITY, NEW JERSEY

MACTEC

CURRENT STEGMAN AND MALLORY
UTILITY CORRIDORS WITHIN CAP AREA
PROJECT 3480-06-0208

M:\Projects\HONEYWELL\SA-5 Design\Figure - Legal Utility Corridor Current.dwg Tue, 12 Jul 2011 - 4:30pm rjriquier

APPENDIX E

WARNING SIGN INFORMATION

APPENDIX E-1

SITE 153 ACCESS POINT WARNING SIGNS
Map Showing Locations of Signs, Example Sign, Summary Table, Photos

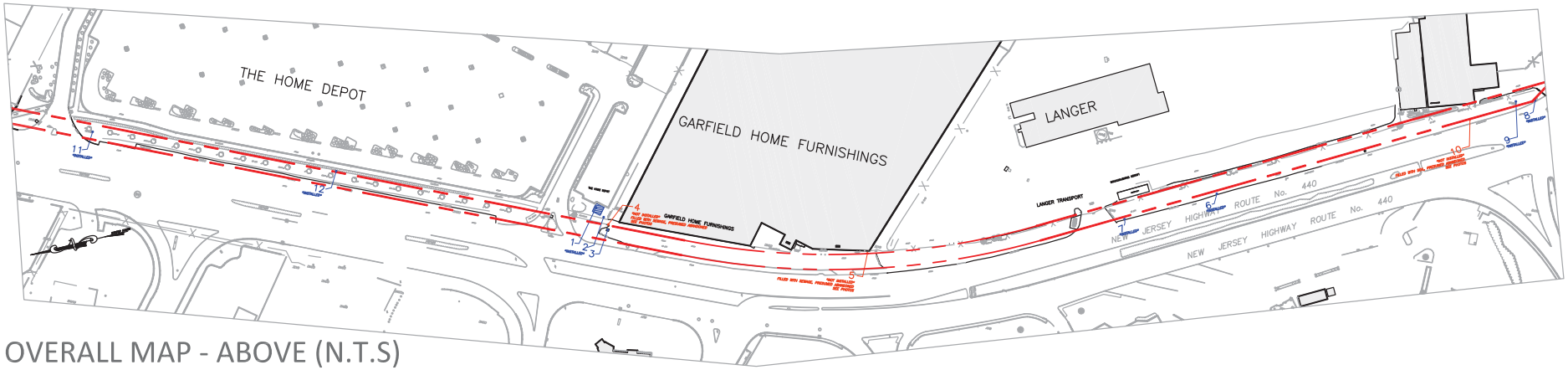


Specs for signage posted on **exterior** of manhole:

- 4-inch high x 6-inch wide
- 18-gauge Stainless Steel

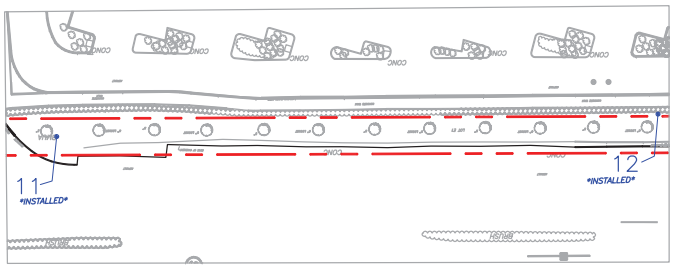
Specs for signage posted on **interior** of manholes:

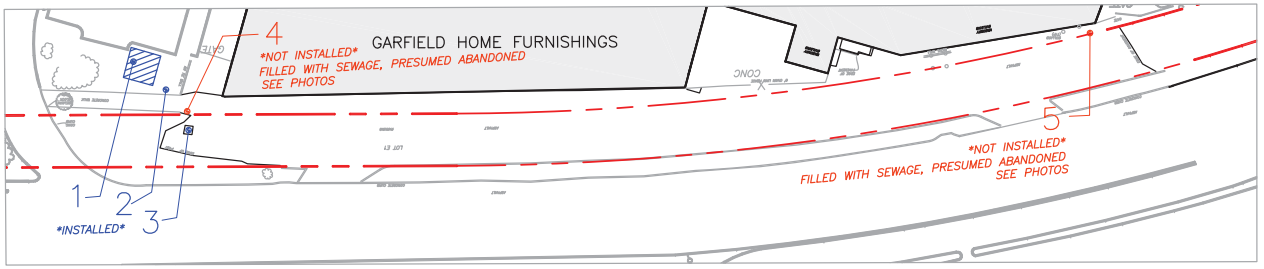
- 4-inch high x 6-inch wide
- 7-gauge Stainless Steel

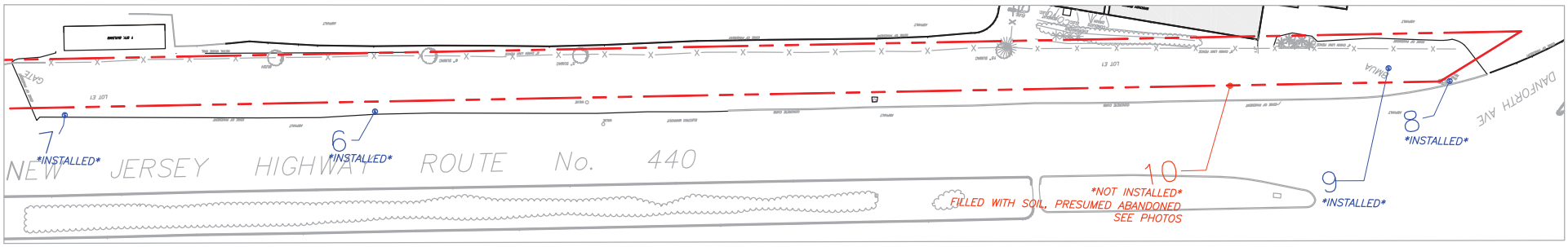


OVERALL MAP - ABOVE (N.T.S)

ENLARGED VIEWS - BELOW (N.T.S.)







REV.	DATE	STATUS	DRFT BY	CHKD BY

AMEC PROJECT No. ####
DRAWING: SITE 153 MANHOLE FIGURE

PREPARED/DATE: JMV 09/13/12
CHECKED/DATE: KS 09/14/12

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

FIGURE 2
MANHOLE WARNING SIGNAGE INSTALLATION
SITE 153 - FORMER MORRIS CANAL
JERSEY CITY, NJ

C:\Users\jonathan.volones\Documents\Honeywell\Site 153 Morris Canal\Cadd Drawings\SITE 153 MANHOLE FIGURE.dwg Tue, 09 Oct 2012 - 9:17am jonathan.volones

TABLE 2.0
SITE 153 (FORMER MORRIS CANAL) MANHOLE SUMMARY

MH No.	Location/Description	Diameter (inches)	Utility	Coordinates (NJ State Plane)	Position Relative to Cap Limits	Warning Signage Installation
1	Outside of cap area North of Garfield Building (Underground Vault)	24	JCMUA (Water)	N 683940.87 E 603353.98	Outside Cap	Installed
2	Northwest of Garfield Building directly south of manhole No. 1	24	JCMUA (Sewer)	N 683932.74 E 603335.98	Outside Cap	Installed
3	Directly West of manhole No. 4	24	JCMUA (Sewer)	N 683931.15 E 603314.71	Within Cap	Installed
4	Northwest corner of Garfield Bldg.	24	JCMUA (Sewer)	N 683928.08 E 603322.85	Outside Cap	Not Installed (abandoned)
5	Southwest corner of Garfield Bldg. within driveway asphalt	24	JCMUA (Sewer)	N 683536.76 E 603180.03	Outside Cap	Not Installed (abandoned)
6	South of Langer entrance, adjacent to Route 440	25	NJDOT(SHD)	N 683124.47 E 603135.84	Outside Cap	Installed
7	South of manhole No. 7, adjacent to Route 440	25	NJDOT(SHD)	N 682971.54 E 603140.32	Outside Cap	Installed
8	Outside work area, south of the BMUA vent	22	NJDOT(SHD)	N 682442.05 E 603164.63	Outside Cap	Installed
9	Southern portion of work area at Danforth Ave. intersection	37	BMUA vent	N 682472.31 E 603170.39	Within Cap	Installed
10	Within new sidewalk adjacent to Route 440	22	NJDOT(SHD)	N 682550.21 E 603160.36	Outside Cap	Not Installed (abandoned)
11	Just south of Home Depot north entrance	24	BMUA vent	N 684694.07 E 603661.76	Within Cap	Installed
12	Adjacent to Home Depot Parking Lot Sidewalk	24	JCMUA (Sewer)	N 684330.74 E 603508.56	Outside Cap	Installed

SITE 153 – FORMER MORRIS CANAL
MANHOLE WARNING SIGNAGE INSTALLATION

	
MANHOLE 1	**MANHOLE 2**
	
MANHOLE 3	**MANHOLE 4 – Abandoned Manhole (Sign Not Installed)**
	
MANHOLE 4 – Abandoned Manhole (Sign Not Installed)	**MANHOLE 5 – Abandoned Manhole (Sign Not Installed)**

SITE 153 – FORMER MORRIS CANAL
MANHOLE WARNING SIGNAGE INSTALLATION



MANHOLE 5 – Abandoned Manhole (Sign Not Installed)



MANHOLE 6



MANHOLE 7



MANHOLE 8



MANHOLE 9



MANHOLE 10 – Abandoned Manhole (Sign Not Installed)

SITE 153 – FORMER MORRIS CANAL
MANHOLE WARNING SIGNAGE INSTALLATION

	
MANHOLE 11 – BMUA Cover Installation	**MANHOLE 12**

APPENDIX E-2

NJCU COMMERCIAL AREA SIGNAGE
Example Sign and Map Showing Locations of Signs

18”

12”

NOTICE



CALL BEFORE DIGGING

855-727-2658


440
NOTICE
CALL
BEFORE
DIGGING
855-727-2658
Sign Location

APPENDIX F

FACT SHEETS: CHROMIUM INFORMATION AND POTENTIAL HEALTH HAZARDS

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

CHROMIUM

CAS # 7440-47-3

Division of Toxicology and Environmental Medicine ToxFAQs™ September 2008

This fact sheet answers the most frequently asked health questions (FAQs) about chromium. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to chromium occurs from ingesting contaminated food or drinking water or breathing contaminated workplace air. Chromium(VI) at high levels can damage the nose and cause cancer. Ingesting high levels of chromium(VI) may result in anemia or damage to the stomach or intestines. Chromium(III) is an essential nutrient. Chromium has been found in at least 1,127 of the 1,669 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is chromium?

Chromium is a naturally occurring element found in rocks, animals, plants, and soil. It can exist in several different forms. Depending on the form it takes, it can be a liquid, solid, or gas. The most common forms are chromium(0), chromium(III), and chromium(VI). No taste or odor is associated with chromium compounds.

The metal chromium, which is the chromium(0) form, is used for making steel. Chromium(VI) and chromium(III) are used for chrome plating, dyes and pigments, leather tanning, and wood preserving.

What happens to chromium when it enters the environment?

❑ Chromium can be found in air, soil, and water after release from the manufacture, use, and disposal of chromium-based products, and during the manufacturing process.
❑ Chromium does not usually remain in the atmosphere, but is deposited into the soil and water .
❑ Chromium can easily change from one form to another in water and soil, depending on the conditions present.
❑ Fish do not accumulate much chromium in their bodies from water.

How might I be exposed to chromium?

❑ Eating food containing chromium(III).
❑ Breathing contaminated workplace air or skin contact during use in the workplace.
❑ Drinking contaminated well water.
❑ Living near uncontrolled hazardous waste sites containing chromium or industries that use chromium.

How can chromium affect my health?

Chromium(III) is an essential nutrient that helps the body use sugar, protein, and fat.

Breathing high levels of chromium(VI) can cause irritation to the lining of the nose, nose ulcers, runny nose, and breathing problems, such as asthma, cough, shortness of breath, or wheezing. The concentrations of chromium in air that can cause these effects may be different for different types of chromium compounds, with effects occurring at much lower concentrations for chromium(VI) compared to chromium(III).

The main health problems seen in animals following ingestion of chromium(VI) compounds are irritation and ulcers in the stomach and small intestine and anemia. Chromium(III) compounds are much less toxic and do not appear to cause these problems.

Sperm damage and damage to the male reproductive system have also been seen in laboratory animals exposed to chromium(VI).

Skin contact with certain chromium(VI) compounds can cause skin ulcers. Some people are extremely sensitive to chromium(VI) or chromium(III). Allergic reactions consisting of severe redness and swelling of the skin have been noted.

How likely is chromium to cause cancer?

The Department of Health and Human Services (DHHS), the International Agency for Reseach on Cancer (IARC), and the EPA have determined that chromium(VI) compounds are known human carcinogens. In workers, inhalation of chromium(VI) has been shown to cause lung cancer. Chromium(VI) also causes lung cancer in animals. An increase in stomach tumors was observed in humans and animals exposed to chromium(VI) in drinking water.

How can chromium affect children?

It is likely that health effects seen in children exposed to high amounts of chromium will be similar to the effects seen in adults.

We do not know if exposure to chromium will result in birth defects or other developmental effects in people. Some developmental effects have been observed in animals exposed to chromium(VI).

How can families reduce the risks of exposure to chromium?

❑ Children should avoid playing in soils near uncontrolled hazardous waste sites where chromium may have been discarded.

❑ Chromium is a component of tobacco smoke. Avoid smoking in enclosed spaces like inside the home or car in order to limit exposure to children and other family members.

❑ Although chromium(III) is an essential nutrient, you should avoid excessive use of dietary supplements containing chromium.

Is there a medical test to determine whether I've been exposed to chromium?

Since chromium(III) is an essential element and naturally occurs in food, there will always be some level of chromium in your body. Chromium can be measured in hair, urine, and blood.

Higher than normal levels of chromium in blood or urine may indicate that a person has been exposed to chromium. However , increases in blood and urine chromium levels cannot be used to predict the kind of health effects that might develop from that exposure.

Has the federal government made recommendations to protect human health?

The EPA has determined that exposure to chromium in drinking water at concentrations of 1 mg/L for up to 10 days is not expected to cause any adverse effects in a child.

The FDA has determined that the chromium concentration in bottled drinking water should not exceed 1 mg/L.

The Occupational Health and Safety Administration (OSHA) has limited workers' exposure to an average of 0.005 mg/m^3 chromium(VI), 0.5 mg/m^3 chromium(III), and 1.0 mg/m^3 chromium(0) for an 8-hour workday, 40-hour workweek.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2008. Toxicological Profile for Chromium (Draft for Public Comment). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmenta l quality department if you have any more questions or concerns.

OSHA FactSheet

Health Effects of Hexavalent Chromium

Hexavalent chromium is a toxic form of the element chromium. Hexavalent chromium compounds are man-made and widely used in many different industries.

Some major industrial sources of hexavalent chromium are:

- chromate pigments in dyes, paints, inks, and plastics
- chromates added as anti-corrosive agents to paints, primers and other surface coatings
- chrome plating by depositing chromium metal onto an item's surface using a solution of chromic acid
- particles released during smelting of ferro-chromium ore
- fume from welding stainless steel or nonferrous chromium alloys
- impurity present in portland cement.

How hexavalent chromium can harm employees

Workplace exposure to hexavalent chromium may cause the following health effects:

- lung cancer in workers who breathe airborne hexavalent chromium
- irritation or damage to the nose, throat, and lung (respiratory tract) if hexavalent chromium is breathed at high levels
- irritation or damage to the eyes and skin if hexavalent chromium contacts these organs in high concentrations.

How hexavalent chromium affects the nose, throat and lungs

Breathing in high levels of hexavalent chromium can cause irritation to the nose and throat. Symptoms may include runny nose, sneezing, coughing, itching and a burning sensation.

Repeated or prolonged exposure can cause sores to develop in the nose and result in nosebleeds. If the damage is severe, the nasal septum (wall separating the nasal passages) develops a hole in it (perforation).

Breathing small amounts of hexavalent chromium even for long periods does not cause respiratory tract irritation in most people.

Some employees become allergic to hexavalent chromium so that inhaling chromate compounds can cause asthma symptoms such as wheezing and shortness of breath.

How hexavalent chromium affects the skin

Some employees can also develop an allergic skin reaction, called allergic contact dermatitis. This occurs from handling liquids or solids containing hexavalent chromium. Once an employee becomes allergic, brief skin contact causes swelling and a red, itchy rash that becomes crusty and thickened with prolonged exposure. Allergic contact dermatitis is long-lasting and more severe with repeated skin contact.

Direct skin contact with hexavalent chromium can cause a non-allergic skin irritation. Contact with non-intact skin can also lead to chrome ulcers. These are small crusted skin sores with a rounded border. They heal slowly and leave scars.

How employees can be exposed to hexavalent chromium

Employees can inhale airborne hexavalent chromium as a dust, fume or mist while:

- producing chromate pigments and powders; chromic acid; chromium catalysts, dyes, and coatings
- working near chrome electoplating
- welding and hotworking stainless steel, high chrome alloys and chrome-coated metal
- applying and removing chromate-containing paints and other surface coatings.

Skin exposure can occur during direct handling of hexavalent chromium-containing solutions, coatings, and cements.

Steps OSHA has taken to protect employees from health hazards caused by hexavalent chromium

The new OSHA workplace standard requires employers to:

- limit eight-hour time-weighted average hexavalent chromium exposure in the workplace to 5 micrograms or less per cubic meter of air.
- perform periodic monitoring at least every 6 months if initial monitoring shows employee exposure at or above the action level (2.5 micrograms per cubic meter of air calculated as an 8-hour time-weighted average).
- provide appropriate personal protective clothing and equipment when there is likely to be a hazard present from skin or eye contact.
- implement good personal hygiene and housekeeping practices to prevent hexavalent chromium exposure.
- prohibit employee rotation as a method to achieve compliance with the exposure limit (PEL).
- provide respiratory protection as specified in the standard.
- make available medical examinations to employees within 30 days of initial assignment, annually, to those exposed in an emergency situation, to those who experience signs or symptoms of adverse health effects associated with hexavalent chromium exposure, to those who are or may be exposed at or above the action level for 30 or more days a year, and at termination of employment.

For more complete information:

OSHA Occupational Safety and Health Administration

U.S. Department of Labor

www.osha.gov

(800) 321-OSHA

DSG 7/2006

Right to Know
Hazardous Substance Fact Sheet

Common Name: **CHROMIUM**

Synonyms: Chrome; Metallic Chromium

Chemical Name: Chromium

Date: January 2000 Revision: March 2009

CAS Number: 7440-47-3

RTK Substance Number: 0432

DOT Number: UN 3089

EMERGENCY RESPONDERS >>>> SEE LAST PAGE

Description and Use

Chromium is a hard, gray, odorless solid with a metallic luster. It is used in stainless and alloy steels, in making alloys, and as an isotope in medicine and research.

Hazard Summary

Hazard Rating	NJDHSS	NFPA
HEALTH	2	-
FLAMMABILITY	3	-
REACTIVITY	0	-

FLAMMABLE POWDER
POISONOUS GASES ARE PRODUCED IN FIRE
CONTAINERS MAY EXPLODE IN FIRE

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

Reasons for Citation

- **Chromium** is on the Right to Know Hazardous Substance List because it is cited by OSHA, ACGIH, DOT, NIOSH, DEP, IARC and EPA.
- This chemical is on the Special Health Hazard Substance List.

- **Chromium** can affect you when inhaled.
- Contact can irritate and burn the skin and eyes with possible eye damage.
- Inhaling **Chromium** can irritate the nose and throat.
- Exposure to **Chromium** *fumes* can cause a flu-like illness called *metal fume fever.*
- **Chromium** may cause a skin allergy and an asthma-like allergy
- Inhaling **Chromium** can cause a sore and/or a hole in the "bone" (septum) dividing the inner nose.
- **Chromium** may affect the liver and kidneys.
- **Chromium** in *powder* form is FLAMMABLE and a DANGEROUS FIRE HAZARD. It may also spontaneously explode in air.

SEE GLOSSARY ON PAGE 5.

FIRST AID

Eye Contact
- Immediately flush with large amounts of water for at least 30 minutes, lifting upper and lower lids. Remove contact lenses, if worn, while flushing. Seek medical attention.

Skin Contact
- Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water.

Inhalation
- Remove the person from exposure
- Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- Transfer promptly to a medical facility.

EMERGENCY NUMBERS

Poison Control: 1-800-222-1222

CHEMTREC: 1-800-424-9300

NJDEP Hotline: 1-877-927-6337

National Response Center: 1-800-424-8802

Workplace Exposure Limits

OSHA: The legal airborne permissible exposure limit (PEL) is **1 mg/m^3** averaged over an 8-hour workshift.

NIOSH: The recommended airborne exposure limit (REL) is **0.5 mg/m^3** averaged over a 8-hour workshift.

ACGIH: The threshold limit value (TLV) is **0.5 mg/m^3** averaged over an 8-hour workshift.

Determining Your Exposure

- Read the product manufacturer's Material Safety Data Sheet (MSDS) and the label to determine product ingredients and important safety and health information about the product mixture.
- For each individual hazardous ingredient, read the New Jersey Department of Health and Senior Services Hazardous Substance Fact Sheet, available on the RTK Program website (www.nj.gov/health/eoh/rtkweb) or in your facility's RTK Central File or Hazard Communication Standard file.
- You have a right to this information under the New Jersey Worker and Community Right to Know Act, the Public Employees Occupational Safety and Health (PEOSH) Act if you are a public worker in New Jersey, and under the federal Occupational Safety and Health Act (OSHA) if you are a private worker.
- The New Jersey Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) and the PEOSH Hazard Communication Standard (N.J.A.C. 12:100-7) require employers to provide similar information and training to their employees.

This Fact Sheet is a summary of available information regarding the health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

Health Hazard Information

Acute Health Effects
The following acute (short-term) health effects may occur immediately or shortly after exposure to **Chromium**:

- Contact can irritate and burn the skin and eyes with possible eye damage.
- Inhaling **Chromium** can irritate the nose and throat causing coughing and wheezing.
- Exposure to **Chromium** *fumes* can cause *"metal fume fever."* This is a flu-like illness with symptoms of metallic taste in the mouth, headache, fever and chills, aches, chest tightness and cough. The symptoms may be delayed for several hours after exposure and usually last for a day or two.

Chronic Health Effects
The following chronic (long-term) health effects can occur at some time after exposure to **Chromium** and can last for months or years:

Cancer Hazard
- While **Chromium** has been tested, it is not classifiable as to its potential to cause cancer.

Reproductive Hazard
- There is no evidence that **Chromium** affects reproduction. This is based on test results presently available to the NJDHSS from published studies.

Other Effects
- Inhaling **Chromium** can cause a sore and/or a hole in the "bone" (septum) dividing the inner nose, sometimes with bleeding, discharge, and/or formation of a crust.
- **Chromium** may cause a skin allergy. If allergy develops, very low future exposure can cause itching and a skin rash.
- **Chromium** may cause an asthma-like allergy. Future exposure can cause asthma attacks with shortness of breath, wheezing, coughing, and/or chest tightness.
- Prolonged skin contact can cause burns, blisters and deep ulcers
- **Chromium** may affect the liver and kidneys.

Medical

Medical Testing
For frequent or potentially high exposure (half the TLV or greater), the following are recommended before beginning work and at regular times after that:

- Lung function tests. The results may be normal if the person is not having an attack at the time of the test.

If symptoms develop or overexposure is suspected, the following are recommended:

- Examine your skin periodically for little bumps or blisters, the first sign of "chrome ulcers." If not treated early, these can last for years after exposure.
- Evaluation by a qualified allergist can help diagnose skin allergy.
- Liver and kidney function tests

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures
- Smoking can cause heart disease, lung cancer, emphysema, and other respiratory problems. It may worsen respiratory conditions caused by chemical exposure. Even if you have smoked for a long time, stopping now will reduce your risk of developing health problems.
- More than light alcohol consumption can cause liver damage. Drinking alcohol can increase the liver damage caused by **Chromium**.

Workplace Controls and Practices

Very toxic chemicals, or those that are reproductive hazards or sensitizers, require expert advice on control measures if a less toxic chemical cannot be substituted. Control measures include: (1) enclosing chemical processes for severely irritating and corrosive chemicals, (2) using local exhaust ventilation for chemicals that may be harmful with a single exposure, and (3) using general ventilation to control exposures to skin and eye irritants. For further information on workplace controls, consult the NIOSH document on Control Banding at www.cdc.gov/niosh/topics/ctrlbanding/.

The following work practices are also recommended:

- Label process containers.
- Provide employees with hazard information and training.
- Monitor airborne chemical concentrations.
- Use engineering controls if concentrations exceed recommended exposure levels.
- Provide eye wash fountains and emergency showers.
- Wash or shower if skin comes in contact with a hazardous material.
- Always wash at the end of the workshift.
- Change into clean clothing if clothing becomes contaminated.
- Do not take contaminated clothing home.
- Get special training to wash contaminated clothing.
- Do not eat, smoke, or drink in areas where chemicals are being handled, processed or stored.
- Wash hands carefully before eating, smoking, drinking, applying cosmetics or using the toilet.

In addition, the following may be useful or required:

- Before entering a confined space where **Chromium** *powder* may be present, check to make sure that an explosive concentration does not exist.
- Use a vacuum or a wet method to reduce dust during clean-up. DO NOT DRY SWEEP.

Personal Protective Equipment

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Gloves and Clothing

- Avoid skin contact with **Chromium**. Wear personal protective equipment made from material which can not be permeated or degraded by this substance. Safety equipment suppliers and manufacturers can provide recommendations on the most protective glove and clothing material for your operation.
- Safety equipment manufacturers recommend Nitrile and Natural Rubber for gloves, and Tyvek®, or the equivalent, as a protective material for clothing.
- All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

- Wear eye protection with side shields or goggles.
- If additional protection is needed for the entire face, use in combination with a face shield. A face shield should not be used without another type of eye protection.

Respiratory Protection

Improper use of respirators is dangerous. Respirators should only be used if the employer has implemented a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

- Where the potential exists for exposure over **0.5 mg/m^3**, use a NIOSH approved negative pressure, air-purifying, particulate filter respirator with an N, R or P95 filter. More protection is provided by a full facepiece respirator than by a half-mask respirator, and even greater protection is provided by a powered-air purifying respirator.
- Leave the area immediately if (1) while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **Chromium**, (2) while wearing particulate filters abnormal resistance to breathing is experienced, or (3) eye irritation occurs while wearing a full facepiece respirator. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter or cartridge. If the seal is no longer good, you may need a new respirator.
- Consider all potential sources of exposure in your workplace. You may need a combination of filters, prefilters or cartridges to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
- Where the potential exists for exposure over **5 mg/m^3**, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.
- Exposure to **250 mg/m^3** is immediately dangerous to life and health. If the possibility of exposure above **250 mg/m^3** exists, use a NIOSH approved self-contained breathing apparatus with a full facepiece operated in a pressure-demand or other positive-pressure mode equipped with an emergency escape air cylinder.

Fire Hazards

If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

- Extinguish fire using an agent suitable for type of surrounding fire. **Chromium** itself does not burn.
- **Chromium** in *powder* form is FLAMMABLE and a DANGEROUS FIRE HAZARD. It may also spontaneously explode in air.
- Use dry sand or dry chemical extinguishing agents to fight **Chromium** *powder* fires.
- POISONOUS GASES ARE PRODUCED IN FIRE.
- CONTAINERS MAY EXPLODE IN FIRE.
- DO NOT get water inside container.

Spills and Emergencies

If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

If **Chromium** *powder* is spilled, take the following steps:

- Evacuate personnel and secure and control entrance to the area.
- Eliminate all ignition sources.
- Moisten spilled material first or use a HEPA-filter vacuum for clean-up and place into sealed containers for disposal.
- Keep **Chromium** *powder* out of confined spaces, such as sewers, because of the possibility of an explosion.
- Ventilate and wash area after clean-up is complete.
- DO NOT wash into sewer.
- It may be necessary to contain and dispose of **Chromium** as a HAZARDOUS WASTE. Contact your state Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.

Handling and Storage

Prior to working with **Chromium** you should be trained on its proper handling and storage.

- **Chromium** may react violently or explosively with AMMONIUM NITRATE; CARBON DIOXIDE ATMOSPHERES; BROMINE PENTAFLUORIDE; LITHIUM; NITROGEN OXIDES; and SULFUR DIOXIDE.
- **Chromium** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE); STRONG ACIDS (such as HYDROCHLORIC and SULFURIC); and ALKALI METALS (such as SODIUM and POTASSIUM).
- Store in tightly closed containers in a cool, well-ventilated area.
- Sources of ignition, such as smoking and open flames, are prohibited where **Chromium** *powder* is used, handled, or stored.

Occupational Health Information Resources

The New Jersey Department of Health and Senior Services, Occupational Health Service, offers multiple services in occupational health. These services include providing informational resources, educational materials, public presentations, and industrial hygiene and medical investigations and evaluations.

For more information, please contact:

New Jersey Department of Health & Senior Services
Right to Know Program
PO Box 368
Trenton, NJ 08625-0368
Phone: 609-984-2202
Fax: 609-984-7407
E-mail: rtk@doh.state.nj.us
Web address: http://www.nj.gov/health/eoh/rtkweb

The Right to Know Hazardous Substance Fact Sheets are not intended to be copied and sold for commercial purposes.

GLOSSARY

ACGIH is the American Conference of Governmental Industrial Hygienists. They publish guidelines called Threshold Limit Values (TLVs) for exposure to workplace chemicals.

Acute Exposure Guideline Levels (AEGLs) are established by the EPA. They describe the risk to humans resulting from once-in-a lifetime, or rare, exposure to airborne chemicals.

Boiling point is the temperature at which a substance can change its physical state from a liquid to a gas.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is unique, identifying number, assigned by the Chemical Abstracts Service, to a specific chemical.

CFR is the Code of Federal Regulations, which are the regulations of the United States government.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes destruction of human skin or severe corrosion of containers.

DEP is the New Jersey Department of Environmental Protection.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

ERG is the Emergency Response Guidebook. It is a guide for emergency responders for transportation emergencies involving hazardous substances.

Emergency Response Planning Guideline (ERPG) values provide estimates of concentration ranges where one reasonably might anticipate observing adverse effects.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

IARC is the International Agency for Research on Cancer, a scientific group.

Ionization Potential is the amount of energy needed to remove an electron from an atom or molecule. It is measured in electron volts.

IRIS is the Integrated Risk Information System database on human health effects that may result from exposure to various chemicals, maintained by federal EPA.

LEL or **Lower Explosive Limit**, is the lowest concentration of a combustible substance (gas or vapor) in the air capable of continuing an explosion.

mg/m^3 means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the federal Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PEOSHA is the New Jersey Public Employees Occupational Safety and Health Act, which adopts and enforces health and safety standards in public workplaces.

Permeated is the movement of chemicals through protective materials.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

Protective Action Criteria (PAC) are values established by the Department of Energy and are based on AEGLs and ERPGs. They are used for emergency planning of chemical release events.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

STEL is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

UEL or **Upper Explosive Limit** is the highest concentration in air above which there is too much fuel (gas or vapor) to begin a reaction or explosion.

Vapor Density is the ratio of the weight of a given volume of one gas to the weight of another (usually *Hydrogen*), at the same temperature and pressure.

The **vapor pressure** is a force exerted by the vapor in equilibrium with the solid or liquid phase of the same substance. The higher the vapor pressure the higher concentration of the substance in air.

Right to Know Hazardous Substance Fact Sheet

Emergency Responders Quick Reference

Common Name: **CHROMIUM**

Synonyms: Chrome; Metallic Chromium
CAS No: 7440-47-3
Molecular Formula: Cr
RTK Substance No: 0432
Description: Hard, gray, odorless solid with a metallic luster

HAZARD DATA

Hazard Rating	Firefighting	Reactivity
2 - Health **3 - Fire** **0 - Reactivity** **DOT#:** UN 3089 **ERG Guide #:** 170 **Hazard Class:** 4.1 (Flammable Solid)	Extinguish fire using an agent suitable for type of surrounding fire. **Chromium** itself does not burn. **Chromium** in *powder* form is FLAMMABLE and a DANGEROUS FIRE HAZARD. It may also spontaneously explode in air. Use dry sand or dry chemical extinguishing agents to fight **Chromium** *powder* fires. POISONOUS GASES ARE PRODUCED IN FIRE. CONTAINERS MAY EXPLODE IN FIRE. DO NOT get water inside container.	**Chromium** may react violently or explosively with AMMONIUM NITRATE; CARBON DIOXIDE ATMOSPHERES; BROMINE PENTAFLUORIDE; LITHIUM; NITROGEN OXIDES; and SULFUR DIOXIDE. **Chromium** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE); STRONG ACIDS (such as HYDROCHLORIC and SULFURIC); and ALKALI METALS (such as SODIUM and POTASSIUM).

SPILL/LEAKS

Isolation Distance:

Spill: 25 meters (75 feet)

Fire: 800 meters (1/2 mile)

Moisten spilled material first or use a HEPA-filter vacuum for clean-up and place into sealed containers for disposal.

Keep **Chromium** *powder* out of confined spaces, such as sewers, because of the possibility of an explosion.

DO NOT wash into sewer.

PHYSICAL PROPERTIES

Odor Threshold:	Odorless
Flash Point:	Noncombustible solid, Flammable *powder*
Vapor Pressure:	<0 mm Hg at 68°F (20°C) (approximate)
Specific Gravity:	7.2 (water = 1)
Water Solubility:	Insoluble
Boiling Point:	4,788°F (2,642°C)
Melting Point:	3,452°F (1,900°C)
Molecular Weight:	52

EXPOSURE LIMITS

OSHA:	1 mg/m^3, 8-hr TWA
NIOSH:	0.5 mg/m^3, 8-hr TWA
ACGIH:	0.5 mg/m^3, 8-hr TWA
IDLH:	250 mg/m^3

The Protective Action Criteria values are:

PAC-1 = 1.5 mg/m^3 PAC-3 = 250 mg/m^3

PAC-2 = 2.5 mg/m^3

PROTECTIVE EQUIPMENT

Gloves:	Nitrile or Natural Rubber
Coveralls:	Tyvek®
Respirator:	>0.5 mg/m^3 - full facepiece APR with High efficiency filters >1.5 mg/m^3 - SCBA

HEALTH EFFECTS

Eyes:	Irritation, burns and possible eye damage
Skin:	Irritation, burns, itching, rash and skin ulcers
Inhalation:	Nose and throat irritation with coughing and wheezing Headache, fever and chills

FIRST AID AND DECONTAMINATION

Remove the person from exposure.

Flush eyes with large amounts of water for at least 30 minutes. Remove contact lenses if worn. Seek medical attention.

Quickly remove contaminated clothing and wash contaminated skin with large amounts of soap and water.

Begin artificial respiration if breathing has stopped and CPR if necessary.

Transfer promptly to a medical facility.

APPENDIX G

DEED NOTICES
SITE 153 MORRIS CANAL SITE AND NJCU COMMERCIAL AREA
SEE SHALLOW GROUNDWATER REMEDY ORDER EXHIBIT 5

APPENDIX G-1

DEED NOTICE FOR SITE 153 MORRIS CANAL SITE-
SEE SHALLOW GROUNDWATER REMEDY ORDER EXHIBIT 5

APPENDIX G-2

DEED NOTICE FOR NJCU COMMERCIAL AREA
-NOT INCLUDED IN THE SHALLOW GROUNDWATER REMEDY ORDER
COPY

APPENDIX H

NJCU WEST CAMPUS DIG PERMIT

SUBSURFACE WORK AUTHORIZATION FORM/DIGGING AND EXCAVATION PERMIT - NJCU WEST CAMPUS CHROMIUM REMEDY -NOT INCLUDED IN THE SHALLOW GROUNDWATER REMEDY ORDER COPY

APPENDIX I

SITE 153 FORMER MORRIS CANAL DIG PERMIT

SUBSURFACE WORK AUTHORIZATION FORMS/DIGGING AND EXCAVATION PERMIT FOR SITE 153 MORRIS CANAL

APPENDIX I-1

SITE 153 DIG PERMIT FOR WORK BY BMUA

SUBSURFACE WORK AUTHORIZATION FORM / DIGGING AND EXCAVATION PERMIT

Site 153 Morris Canal – Chromium Remedy – Work Performed by BMUA

Prior to Performing Work (Completed by BMUA or Contractor)

Project Name:					
Request Date:		**Est. Start Date:**		**Est. Duration:**	
General Work Description:					
Depth of Digging/Excavation:					
Contractor Performing Work:					
Contractor Supervisor:			**Phone No.:**		
BMUA Project Contact:			**Phone No.:**		

Location of Work: ☐ **Site 153 North (next to NJCU)** ☐ **Site 153 South**

Prior to Performing Work[1] (Completed by BMUA and Honeywell)

☐ Contact Honeywell to review proposed work activity.

☐ Provide drawings showing proposed subsurface work or design drawings (if applicable).

☐ Schedule project meeting to review proposed work and coordination with Honeywell.

Yes ☐ **No** ☐ Does proposed work involve disturbance to engineering controls? If yes, review deed notice requirements for disturbances, restoration, notification, reporting; and confirm that workers receive and review Worker Training Manual and Standard Operating Procedure for Site 153.

Yes ☐ **No** ☐ NJDEP to be notified per Deed Notice. Estimated date of notification: _____

Yes ☐ **No** ☐ Plaintiffs to be notified if applicable per Consent Decree requirements. Estimated date of notification: _____

Field Work Phase (Prior to Digging) (Completed by BMUA and Honeywell)

1. Honeywell field oversight or contractor coordination required?	**Yes** ☐	- coordinate with Honeywell representative.
	No ☐	- proceed with work/no further input from Honeywell.
2. Will the project involve excavation and offsite disposal of chromium soils?	**Yes** ☐	- coordinate with Honeywell representative.
	No ☐	- proceed with work/no further input from Honeywell.

HONEYWELL AND BMUA APPROVAL REQUIRED TO PROCEED WITH WORK.

Comments (Completed by Contractor, BMUA and Honeywell)

Contractor Signature:		**Date:**	
BMUA Signature:		**Date:**	
Honeywell Signature:		**Date:**	

COMPLETE PAGE 1 BEFORE FIELD WORK COMMENCES

SUBSURFACE WORK AUTHORIZATION FORM / DIGGING AND EXCAVATION PERMIT

Site 153 Morris Canal – Chromium Remedy – Work Performed by BMUA

COMPLETE THIS SECTION ONLY IF THERE ARE DESIGN OR FIELD CHANGES

Field Work Changes (Completed by Contractor, BMUA and Honeywell)
IN THE EVENT OF ANY DESIGN OR FIELD CHANGES DURING WORK IMPLEMENTATION, PROVIDE A BRIEF DESCRIPTION OF DESIGN AND/OR FIELD CHANGE AND OBTAIN HONEYWELL AND BMUA APPROVAL TO PROCEED WITH WORK.
Describe Changed Conditions (Completed by Contractor, BMUA and Honeywell)

Contractor Signature:		**Date:**	
BMUA Signature:		**Date:**	
Honeywell Signature:		**Date:**	

COMPLETE THE SECTION BELOW AFTER WORK IS COMPLETE

Post-Work Phase/Closeout Requirements (Completed by Contractor, BMUA and Honeywell)			
Actual Start Date:		**Actual Finish Date:**	
Actual NJDEP Notification Date:		Actual Plaintiff Notification Date:	

- ☐ 1. Compile representative photographs showing work progress, restoration of engineering controls.
- ☐ 2. Prepare as-built figure or other appropriate drawing(s) showing work area, relevant site features.
- ☐ 3. Prepare and submit deed notice disturbance report.

HONEYWELL AND BMUA SIGN-OFF REQUIRED AT COMPLETION OF WORK.

Comments (Completed by Contractor, BMUA and Honeywell)

Contractor Signature:		**Date:**	
BMUA Signature:		**Date:**	
Honeywell Signature:		**Date:**	

Notes:

(1) Field Work Restrictions:

- Field verification of the exact location of remedy components including the warning layer and liner (where present) is required in all intrusive activities.
- Mechanical digging is restricted. Excavation within 12 inches of the force main or warning layer (where present) must be performed using soft dig techniques or other method approved by the BMUA and Honeywell.
- Driving of fence posts or use of drilling/Geoprobe is also restricted and shall not be initiated unless the approach is approved by Honeywell.

APPENDIX I-2

SITE 153 DIG PERMIT FOR WORK BY NON-BMUA ENTITIES

SUBSURFACE WORK AUTHORIZATION FORM / DIGGING AND EXCAVATION PERMIT

Site 153 Morris Canal – Chromium Remedy – Work Performed by Non-BMUA Entities

Prior to Performing Work (Completed by Honeywell)

Project Name:					
Request Date:		**Est. Start Date:**		**Est. Duration:**	
General Work Description:					
Depth of Digging/Excavation:					
Contractor Performing Work:					
Contractor Supervisor:			**Phone No.:**		
Utility Contact:			**Phone No.:**		

Location of Work: ☐ **Site 153 North (next to NJCU)** ☐ **Site 153 South**

Prior to Performing Work[1] (Completed by Honeywell)

☐ Honeywell and contractor to review proposed work activity.

☐ Contractor to provide drawings showing proposed subsurface work or design drawings (if applicable).

☐ Schedule project meeting to review proposed work and coordination requirements.

Yes ☐ **No** ☐ Does proposed work involve disturbance to engineering controls? If yes, review deed notice requirements for disturbances, restoration, notification, reporting; and confirm that workers receive and review Worker Training Manual and Standard Operating Procedure for Site 153.

Yes ☐ **No** ☐ NJDEP to be notified per Deed Notice. Estimated date of notification: _____

Yes ☐ **No** ☐ Plaintiffs and BMUA to be notified if applicable per Consent Decree requirements. Estimated date of notification: _____

Field Work Phase (Prior to Digging) (Completed by Honeywell and Contractor)

1. Honeywell field oversight or contractor coordination required?	**Yes** ☐	- coordinate with Honeywell representative.
	No ☐	- proceed with work/no further input from Honeywell.
2. Will the project involve excavation and offsite disposal of chromium soils?	**Yes** ☐	- coordinate with Honeywell representative.
	No ☐	- proceed with work/no further input from Honeywell.

HONEYWELL AND CONTRACTOR APPROVAL REQUIRED TO PROCEED WITH WORK.

Comments (Completed by Contractor, BMUA and Honeywell)

Contractor Signature:		**Date:**	
Honeywell Signature:		**Date:**	

COMPLETE PAGE 1 BEFORE FIELD WORK COMMENCES

SUBSURFACE WORK AUTHORIZATION FORM / DIGGING AND EXCAVATION PERMIT

Site 153 Morris Canal – Chromium Remedy – Work Performed by Non-BMUA Entities

COMPLETE THIS SECTION ONLY IF THERE ARE DESIGN OR FIELD CHANGES

Field Work Changes (Completed by Honeywell and Contractor)			
IN THE EVENT OF ANY DESIGN OR FIELD CHANGES DURING WORK IMPLEMENTATION, PROVIDE A BRIEF DESCRIPTION OF DESIGN AND/OR FIELD CHANGE AND OBTAIN HONEYWELL APPROVAL TO PROCEED WITH WORK.			
Describe Changed Conditions (Completed by Honeywell and Contractor)			
Contractor Signature:		**Date:**	
Honeywell Signature:		**Date:**	

COMPLETE THE SECTION BELOW AFTER WORK IS COMPLETE

Post-Work Phase/Closeout Requirements (Completed by Honeywell and Contractor)			
Actual Start Date:		**Actual Finish Date:**	
Actual NJDEP Notification Date:		Actual Plaintiff Notification Date:	

- ☐ 1. Compile representative photographs showing work progress, restoration of engineering controls.
- ☐ 2. Prepare as-built figure or other appropriate drawing(s) showing work area, relevant site features.
- ☐ 3. Prepare and submit deed notice disturbance report.

HONEYWELL AND CONTRACTOR SIGN-OFF REQUIRED AT COMPLETION OF WORK.

Comments (Completed by Honeywell and Contractor)			
Contractor Signature:		**Date:**	
Honeywell Signature:		**Date:**	

Notes:

(1) Field Work Restrictions:

- Field verification of the exact location of remedy components including the warning layer (where present) is required in all intrusive activities.
- Mechanical digging is restricted. Excavation within 12 inches of the force main or warning layer (where present) must be performed using soft dig techniques or other method approved by the BMUA and Honeywell.
- Driving of fence posts or use of drilling/Geoprobe is also restricted and shall not be initiated unless the approach is approved by Honeywell.

Hudson County Recording Data Page Honorable Diane Coleman Hudson County Register	*Official Use Only – Barcode* 20191112010108790 1/182 11/12/2019 09:06:34 AM DEED Bk: 9448 Pg: 915 Diane Coleman Hudson County, Register of Deeds Receipt No. 1563828
Official Use Only – Record & Return	
Date of Document: November 1, 2019	Type of Document: Deed Notice
First Party Name: Honeywell International Inc.	Second Party Name:
Additional Parties:	

THE FOLLOWING SECTION IS REQUIRED FOR DEEDS ONLY	
Block:	Lot:
Municipality:	
Consideration:	
Mailing Address of Grantee:	

THE FOLLOWING SECTION IS FOR ORIGINAL MORTGAGE BOOKING & PAGING INFORMATION FOR ASSIGNMENTS, RELEASES, SATISFACTIONS, DISCHARGES & OTHER ORIGINAL MORTGAGE AGREEMENTS ONLY	
Original Book:	Original Page:

HUDSON COUNTY RECORDING DATA PAGE

Please do not detach this page from the original document as it contains important recording information and is part of the permanent record.

Return Address:
Honeywell
115 Tabor Road, 4-D4
Morris Plains, NJ 07950

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] Perry Florio, Esq.

_____
[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 1st day of November 2019, by Honeywell International Inc. ("Honeywell") and its subsidiary 425/445 Route 440 Property LLC, whose post office address is 115 Tabor Road, Morris Plains, New Jersey 07950. 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; and the Property is more particularly described in Exhibit A. The Property consists of three

segments identified in Exhibit B as Site 153 North, Site 153 South, and Site 153 Tract 2. The portions of the Property known as Site 153 South and Site 153 North are subject to the Consent Decree Regarding Site 79 and 153 South (the "Sites 79 and 153 South Consent Decree") (ECF No. 301 in docket 05-5955) and the Amended Consent Decree Regarding Remediation of the New Jersey City University (NJCU) Redevelopment Area (the "NJCU Consent Decree") (ECF No. 1506 in docket 95-2097) (collectively, the "Consent Decrees") respectively, which have been entered as orders of the United States District Court in the District of New Jersey on January 21, 2010, and September 21 2017, respectively, in *Riverkeeper v. Honeywell International Inc.,* D.N.J., Civ. No. 06-22 (Consolidated with Civ. No. 95-2097). Both Consent Decrees are attached hereto as Exhibit D: the Sites 79 and 153 South Consent Decree is Exhibit D-1 and the NJCU Consent Decree is Exhibit D-2. The Site 153 South and North portions of the Property subject to this Deed Notice are described by metes and bounds in Exhibit A-2. 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, as they may from time to time be amended, the Consent Decrees shall govern.

2. REMEDIATION.

i. The NJDEP Bureau of Case Management was the program that was responsible for the oversight of the remediation of the Property. The matter is 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, and attached hereto as Exhibit E. Honeywell also has responsibilities for chromium remediation under the Consent Decrees. *See* Exhibit D hereto, Sites 79 and 153 South Consent Decree, paragraph 71; NJCU Consent Decree, paragraph 82.

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, has conducted remediation of 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 the above-referenced work plans and the Consent Decrees, and meet the requirements of the Sewer Protocol as specified in the Consent Judgment. The remedial actions were documented in a Remedial Investigation Report/Remedial Action Work Plan/Remedial Action Report for Site 153 dated March 2015, approved by the NJDEP on September 14, 2017. 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. Soil contamination exceeding the NJDEP soil criterion of 20 mg/kg is located beneath the existing engineering controls and extends to approximately 10 to 20 feet below ground surface based on hexavalent chromium soil sample results. Within a limited portion of the Site, next to Hudson County Chromate Site 090 (Former Baldwin Steel) and the northern part of Hudson County Chromate Site 117 (former Ryerson Steel), also known as the New Jersey City University (NJCU) West Campus and Home Depot shopping center, native soils below the fill at depths greater than 20 feet may contain hexavalent chromium above 20 mg/kg due to groundwater conditions. 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 consideration, 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, lessors, lessees and operators of the Property of the restrictions and the monitoring, maintenance, and future remediation requirements in this Deed Notice until the Property is further remediated and no longer must be encumbered by this Deed Notice pursuant to the terms of the Consent Decrees.

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 at its office at 115 Tabor Road, Morris Plains, New Jersey 07950,

and at Study Area 6 (also known as Bayfront Redevelopment), located west of the Property on the westside of Route 440, at either the onsite trailers or within the Groundwater Treatment Plant building, for inspection by governmental enforcement officials.

5B. RESTRICTED LAND USES. The following 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;

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;

iii. The NJCU Consent Decree, paragraph 95, restricts the future use of Site 153 North to open space, utility corridor, transportation, roadway, crossing, or access to adjacent properties, until the site has been remediated so that chromium concentrations in soil and groundwater do not exceed NJDEP Soil Remediation Criteria and Groundwater Remediation Standards; and

iv. The Sites 79 and 153 South Consent Decree, paragraph 76, restricts the future use of Site 153 South to open space, utility corridor, transportation, roadway, crossing, or access to adjacent properties, until the site has been remediated so that chromium concentrations in soil and groundwater do not exceed NJDEP Soil Remediation Criteria and Groundwater Remediation Standards.

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 installed within 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.

5E. LONG TERM MONITORING PLANS. Honeywell has prepared Long Term Monitoring Plans (LTMP) for Site 153 as follows: LTMP for New Jersey City University (NJCU) and Site 153 North and LTMP for Sites 79/153 South. The LTMPs set forth requirements for monitoring of the chromium remedial measures including engineering controls and requirements for notification and reporting pursuant to the Consent Decrees, Deed Notice and Soil Remedial Action Permit. The LTMPs may from time to time be amended, and references to the LTMPs in this Deed Notice refer to the most current version of the LTMPs. Copies of LTMPs are maintained by Honeywell at 115 Tabor Road, Morris Plains, New Jersey 07950, and at Study Area 6 (also known as Bayfront Redevelopment), located west of the Property on the westside of Route 440, at either the onsite trailers or within the Groundwater Treatment Plant building.

5F. WORKER TRAINING MANUAL/STANDARD OPERATING PROCEDURE. Honeywell has prepared a Worker Training Manual that shall be used during any ground intrusive work in the Restricted Area. The Worker Training Manual shall be used by the owner, lessees, operators, tenants, and any other entity conducting ground intrusive work within the Restricted Area, in order to protect workers who may be exposed to chromium-impacted soils or groundwater in conjunction with utility or other ground intrusive work on the Restricted Area. The Worker Training Manual identifies health and safety requirements for the protection of personnel and contractors who may perform ground intrusive activities (e.g., digging, drilling, excavation) and provides a basis for worker awareness to inform workers of potential hazards associated with chromium-impacted media. Honeywell shall make the Worker Training Manual available to lessees, operators, contractors, utility workers, and any other entity when Honeywell becomes aware that such entity intends to conduct ground intrusive work within the Restricted Area in order to prevent unauthorized disturbance of engineering controls and potential exposure to contaminants. Honeywell, in cooperation with the City of Bayonne, prepared a Standard Operating Procedure (SOP) which addresses identification, notification and coordination of work between Honeywell and the City of Bayonne related to the force sewer main pipeline within Site 153. A copy of the Worker Training Manual and SOP are available from Honeywell at 115 Tabor Road, Morris Plains, New Jersey 07950, and at Study Area 6 (also known as Bayfront Redevelopment), located west of the Property on the westside of Route 440, at either the onsite trailers or within the Groundwater Treatment Plant building.

6A. CHANGE IN OWNERSHIP AND REZONING.

The Owner, lessors, 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.

i. The Owner 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 of Site 153 North or Site 153 South must be consistent with the terms of the Consent Decrees.

ii. The Owner 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 Owner's successors and assigns, easement holders, lessors, lessees and operators while each is an owner, easement holder, lessor, lessee, or operator of the Property.

7A. ALTERATIONS, IMPROVEMENTS, AND DISTURBANCES.

i. The Owner and all lessees shall notify any person, including, without limitation, easement holders, tenants, employees of tenants, and contractors, intending to conduct ground intrusive work or excavate within the Restricted Areas, of the nature and location of contamination in the Restricted Areas, and, of the precautions necessary to protect the engineering controls and minimize potential human exposure to contaminants. Such notice will include providing the Worker Training Manual and SOP.

ii. Except as provided in the Consent Decrees and Paragraph 7B, no person shall make, or allow to be made, any permanent 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. Any permanent alteration, improvement, or disturbance shall require a soil remedial action permit modification and adhere to the following requirements:

(A) Such activity is taken in conformance with the Consent Decrees;

(B) Honeywell is notified of the activity by calling 855-727-2658 at least 7 business days before the beginning of each alteration, improvement, or disturbance;

(C) Honeywell restores any disturbance of an engineering control to conditions at least as protective as those required under the applicable Consent Decrees within

sixty (60) calendar days after the initiation of the alteration, improvement or disturbance (or such longer time as may be approved by the NJDEP);

(D) All applicable worker health and safety laws and regulations, the Sewer Protocol, LTMPs, and Worker Training Manual and SOP are followed during the alteration, improvement, or disturbance, and during the restoration;

(E) Appropriate measures are taken so that human exposure and environmental exposure to contamination in excess of the applicable remediation criteria and standards does not occur; and

(F) The owner, lessor, lessee or operator shall submit the following within 30 to 60 days after the occurrence of a permanent alteration, improvement, or disturbance:

i. Within 30 days, a Remedial Action Workplan or Linear Construction Project notification and Final Report Form, whichever is applicable;

ii. Within 30 days, a Remedial Action Report and Termination of Deed Notice Form; and

iii. Within 60 days, a revised recorded Deed Notice with revised Exhibits, and Remedial Action Permit Modification or Remedial Action Permit Termination form and Remedial Action Report.

iv. A soil remedial action permit modification is not required for any temporary alteration, improvement, or disturbance provided that the site is restored to the condition described in the Exhibits to this Deed Notice and:

(A) Such action is taken in conformance with the Consent Decrees;

(B) Honeywell is notified of the activity by calling 855-727-2658 at least 7 business days before the beginning of each temporary alteration, improvement, or disturbance;

(C) Honeywell restores any disturbance of an engineering control to pre-disturbance conditions within sixty (60) calendar days after the initiation of the temporary alteration, improvement or disturbance (or such longer time as may be approved by the NJDEP);

(D) All applicable worker health and safety laws and regulations, the Sewer Protocol, LTMPs, and Worker Training Manual and SOP are followed during the temporary alteration, improvement, or disturbance, and during the restoration;

(E) Appropriate measures are taken so that human exposure and environmental exposure to contamination in excess of the applicable remediation criteria and standards does not occur; and

(F) The next biennial certification includes a description of the nature of the temporary alteration, improvement, or disturbance, the dates and duration of the temporary alteration, improvement, or disturbance, the name of key individuals and their affiliations conducting the temporary alteration, improvement, or disturbance, the notice the Owner gave to those persons prior to the disturbance; the amounts of soil generated for disposal, if any, the final disposition, and any precautions taken to prevent exposure.

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:

i. NJDEP is immediately notified of the emergency, by calling the NJDEP Hotline at 1-877-WARNDEP or 1-877-927-6337;

ii. Immediately after notifying NJDEP, Honeywell is notified of the emergency by calling 855-727-2658;

iii. The actual disturbance and the time needed for the disturbance are limited to the minimum reasonably necessary to adequately respond to the emergency;

iv. All measures necessary to limit actual or potential, and present or future risk of exposure to humans or the environment to the contamination are implemented;

v. NJDEP is notified when the emergency or immediate environmental concern has ended by calling the NJDEP Hotline at 1-877-WARNDEP or 1-877-927-6337;

vi. Honeywell is notified when the emergency or immediate environmental concern has ended by calling 855-727-2658; and

vii. Honeywell restores or causes restoration of 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 extent of discharges of or exposures to contaminants, if any, that 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) any 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 implementing 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. Certifying 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-1.5, and according to the schedule specified in the soil remedial action permit for the Property.

8B. MONITORING AND MAINTENANCE OF ENGINEERING CONTROLS, AND PROTECTIVENESS CERTIFICATION. Honeywell 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 the Consent Decrees, LTMP, and 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-1.5, and according to the schedule specified in the soil remedial action permit for the Property.

9. ACCESS. The Owner and lessors, 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 and maintaining the protectiveness of the remedial action fail to conduct such remediation pursuant to this Deed Notice as required by law. The Owner and lessors, 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. 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.

ii. 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.

iii. Any person seeking a modification of this Deed Notice with respect to Site 153 North or Site 153 South must also have such modification approved by the United States District Court for the District of New Jersey pursuant to the Consent Decrees.

iv. If the United States District Court for the District of New Jersey (for the Site 153 North and the Site 153 South portions of the property) and the NJDEP have concluded that this Deed Notice shall be modified or terminated, such modification or termination shall only be effective upon the recording of a Department-approved 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. Within thirty (30) calendar days after the recording of a Department-approved Termination of Deed Notice, the owner of the property should apply to the Department for modification or termination of the soil remedial action permit pursuant to N.J.A.C. 7:26C-7.

v. This Deed Notice may be modified only if it has first been terminated pursuant to subparagraph 12iv 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 upland sediment 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 - 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 or 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 controls:

(1) Description of the engineering controls;

(2) The objective of the engineering controls; and

(3) How the engineering controls are intended to function.

(B) Description of the operation and maintenance necessary to ensure 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 controls are being inspected and maintained and their 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 controls continue to operate as designed; and

(3) The remedial action that includes the engineering controls 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.

13E. EXHIBIT E. Future Remediation Pursuant to Sewer Protocol: Exhibit E includes a copy of the Sewer Protocol that is Appendix B to the Consent Judgment between the NJDEP and Honeywell.

14. SIGNATURES.

IN WITNESS WHEREOF, Owner has executed this Deed Notice as of the date first written above.

ATTEST:

Maria Kaouris

Maria Kaouris, Remediation Manager
[Print name and title]

425/445 Route 440 Property LLC
By John J. Morris, Remediation Director

[Signature]

STATE OF NEW JERSEY
COUNTY OF MORRIS

SS.:

I certify that on Nov. 1, 2019, 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.

Maria Kaouris

[Signature]

Maria Kaouris, Remediation Manager
[Print name and title of attesting witness]

Signed and sworn before me on Nov. 1, 2019

Cheryl Lynn Toles, Notary Public

Cheryl Lynn Toles
[Print name and title]

CHERYL LYNN TOLES
My Comm. Exp. 10-27-2020
NOTARY PUBLIC
No. 2336504
NEW JERSEY

EXHIBIT A

A-1 Vicinity Map
A-2 Metes and Bounds Description and Tax Map
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, Hudson County, New Jersey

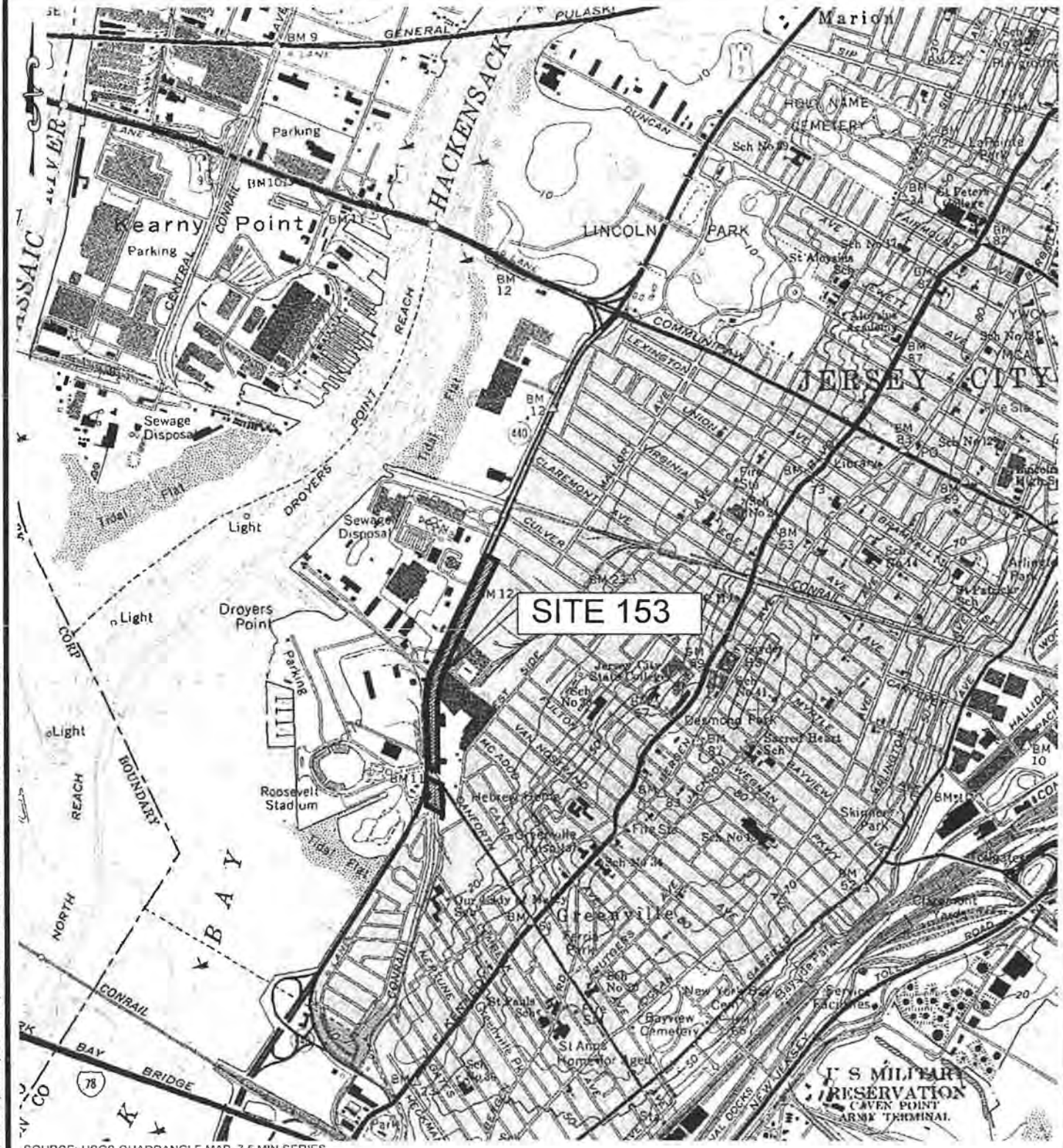
Exhibit Figure A-1 consists of a road map for the vicinity of the Property.

Exhibit A-2A consists of a metes and bounds description for the Property.
Exhibit Figure A-2B consists of a Tax Map for the Property.

Exhibit Figures A-3 (A-3A through A-3D) consists of 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

WOOD PROJECT No.3482180591 DRAWING: 3482180591-6102-SL00-0000		wood. ENVIRONMENT & INFRASTRUCTURE SOLUTIONS 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
PREPARED/DATE: CW 04/05/18	CHECKED/DATE: JH 04/05/18		

FILE: P:\CADD\HONEYWELL\JERSEY CITY\SA 5\SITE 153\3482170071\610000\DEED NOTICE\3482180591-6102-SL00-0000.DWG, DATE: 03/21/2018 03:09:56PM 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:

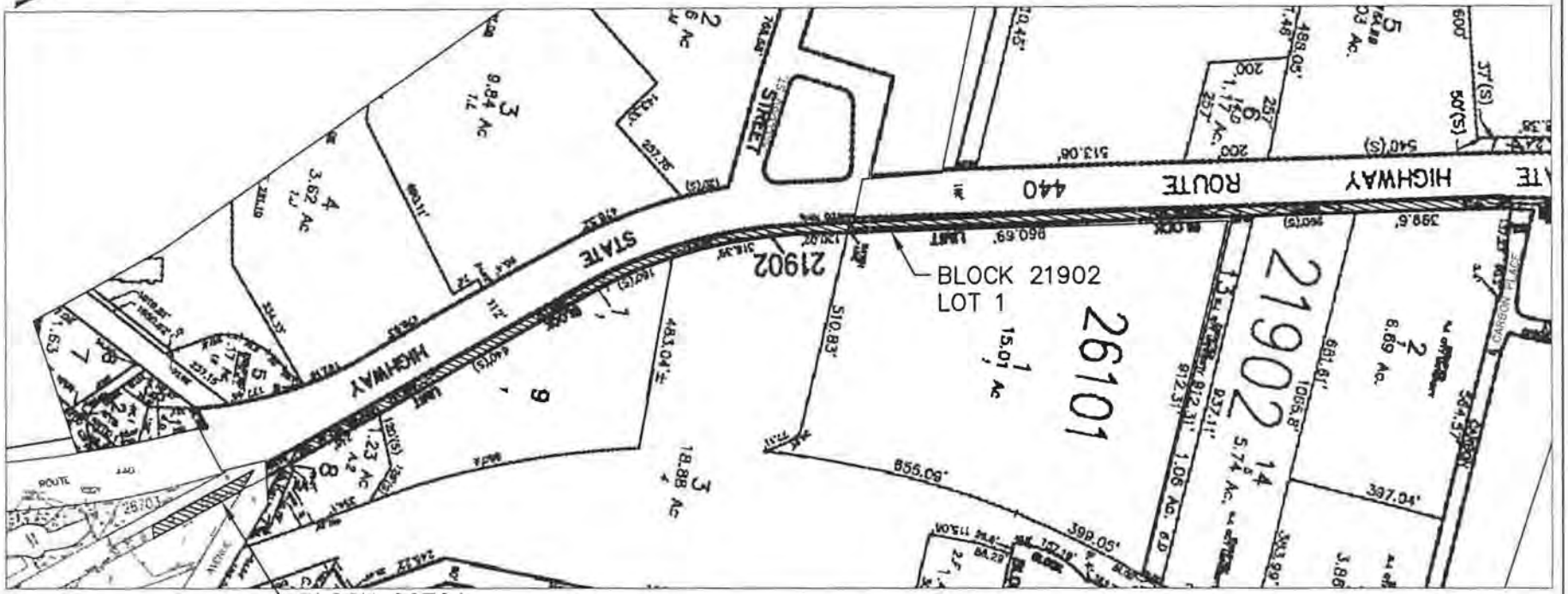
All those two certain pieces or parcels of land, being a part or portion of Grantor's property known as Branch No.1 identified as Line Code 0597 in Grantor's corporate records, also known as Block 21902, Lot 1 and Block 26704, Lot 5 (formerly Block 1289.5, Lot E) on City of Jersey City Tax maps, situate 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

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SCALE IN FEET

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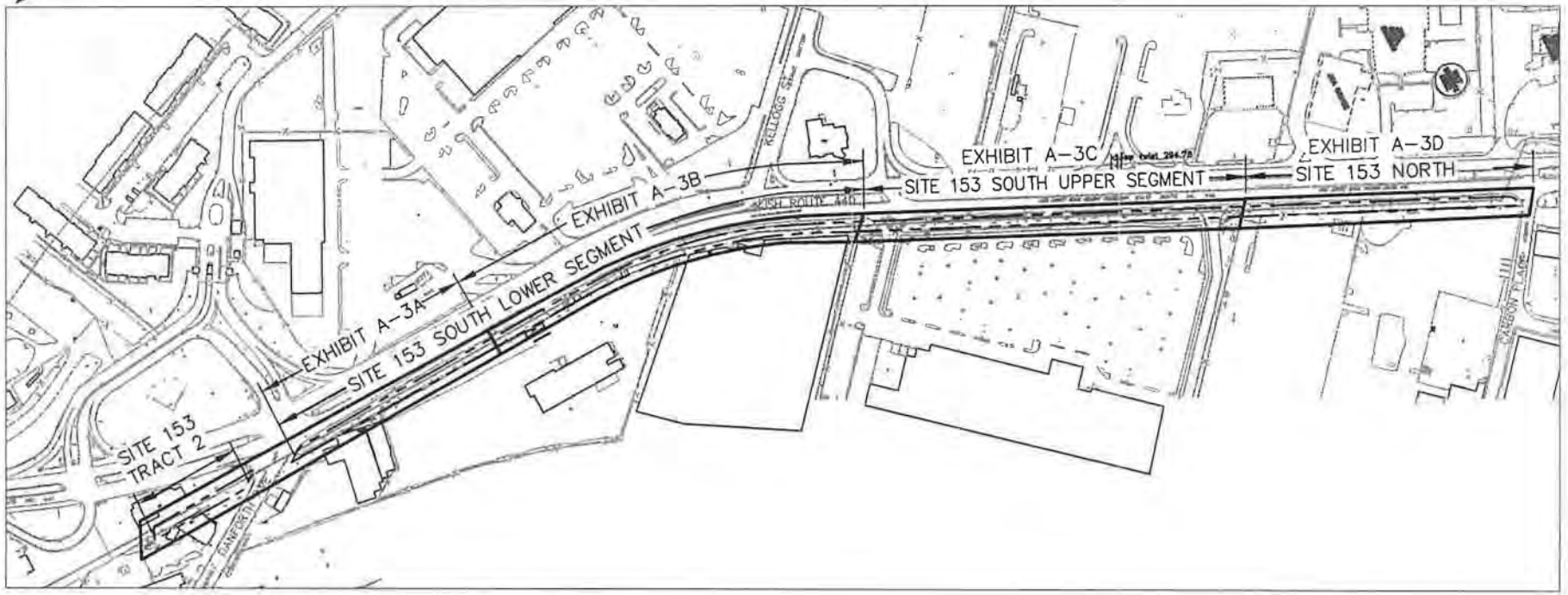
PREPARED/DATE: CW 09/20/17
CHECKED/DATE: JH 09/20/17

wood.
ENVIRONMENT & INFRASTRUCTURE SOLUTIONS
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 Figures A-3
A-3A through A-3D
Property Maps

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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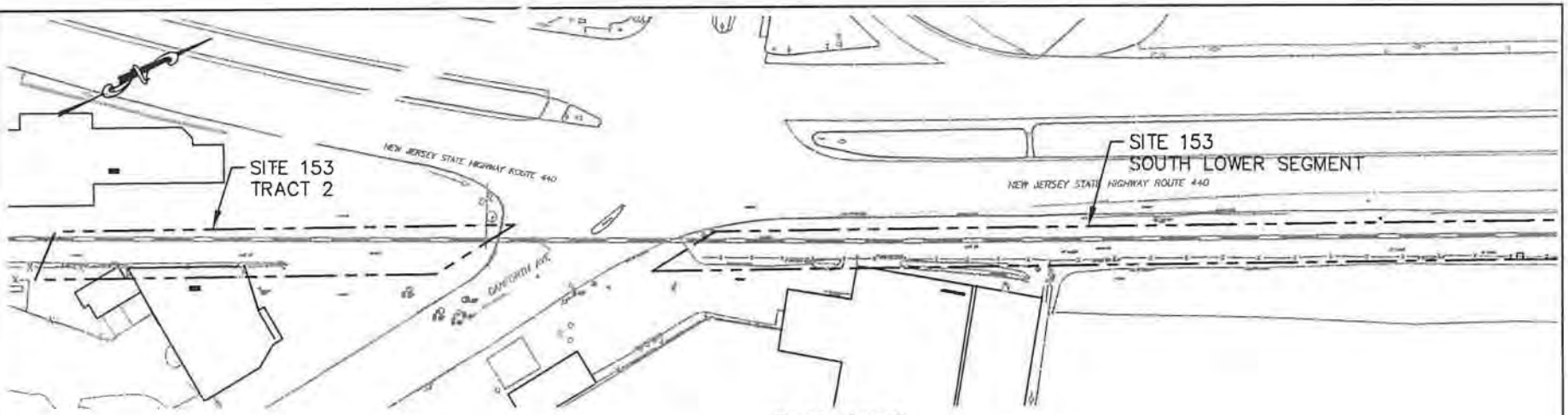
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PREPARED/DATE: CW 09/20/17
CHECKED/DATE: JH 09/20/17

wood.
ENVIRONMENT & INFRASTRUCTURE SOLUTIONS
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
- GROUND ELEVATION CONTOUR
- CONCRETE CURB

REV	DATE	STATUS	DRFT BY	CHK'D BY

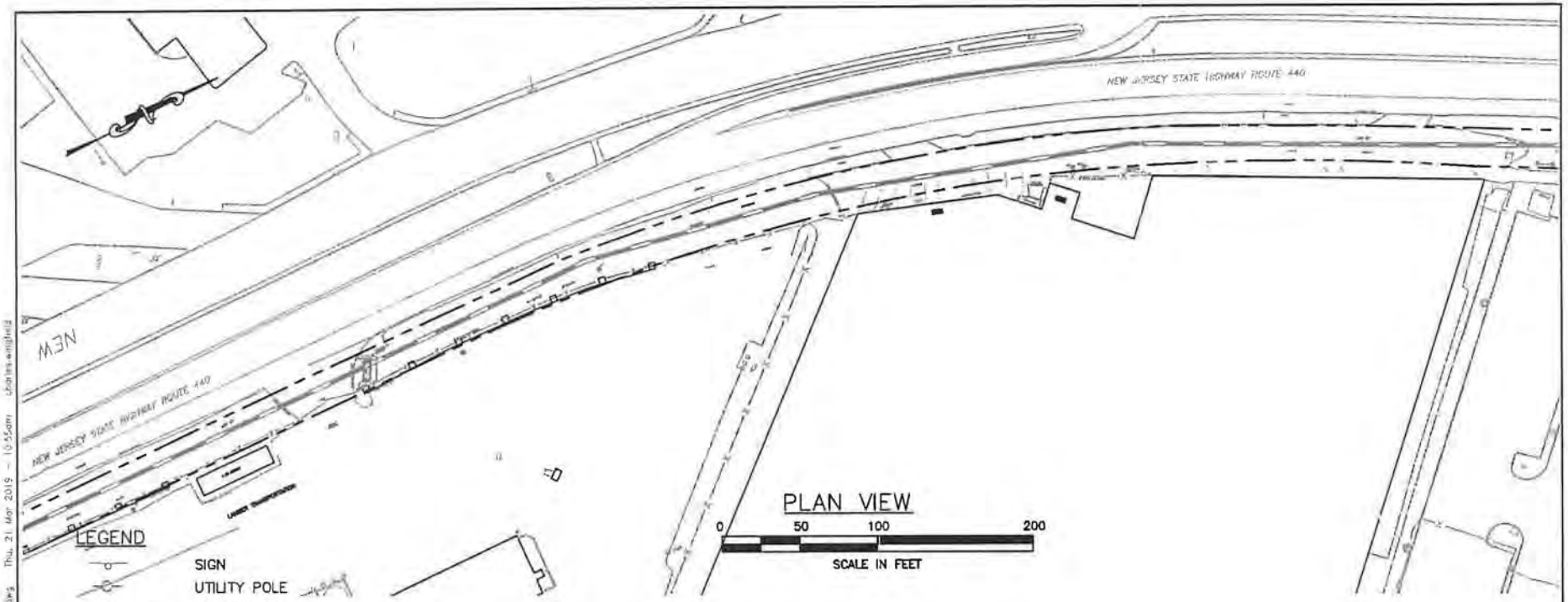
WOOD PROJECT No. 3482170571
DRAWING: 3482170571-6102-A300-0000

PREPARED/DATE: CW 09/20/17
CHECKED/DATE: JH 09/20/17

wood.
ENVIRONMENT & INFRASTRUCTURE SOLUTIONS
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

P:\CAD\HONEYWELL\JERSEY CITY\SA 5\SITE 153\3482170571\6102\deed notice\3482170571-6102-A300-0000.dwg Thu, 21 Mar 2015 - 10:55am chris.mayfield



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
- CONCRETE CURB

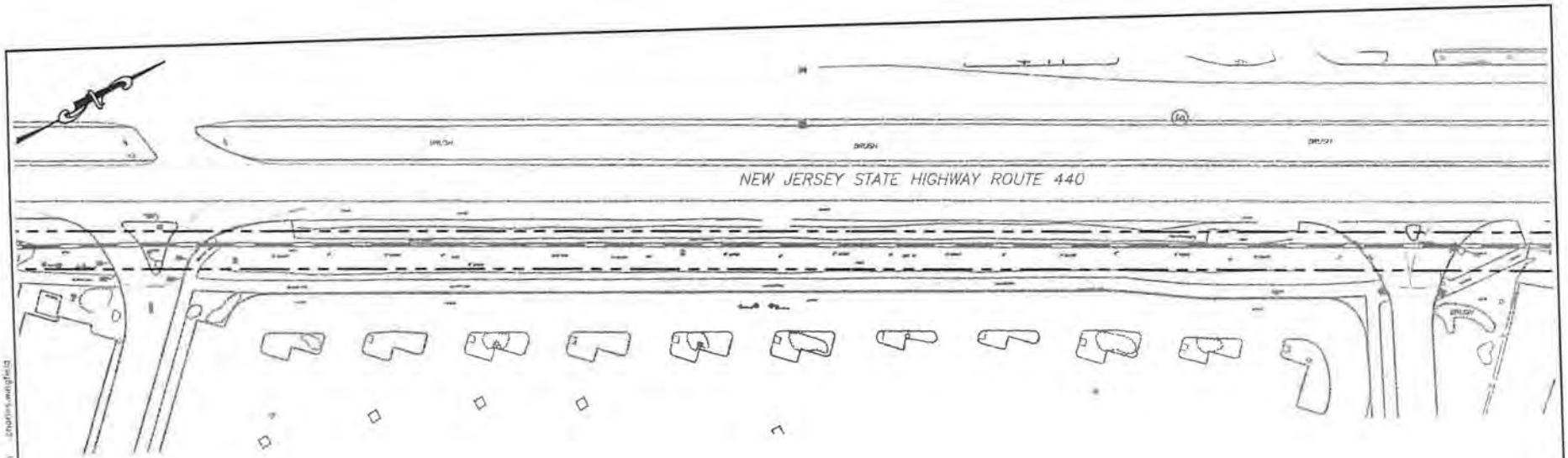
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WOOD PROJECT No. 3482170571
DRAWING: 3482170571-6102-A300-0000

PREPARED/DATE: CW 09/20/17
CHECKED/DATE: JH 09/20/17

wood.
ENVIRONMENT & INFRASTRUCTURE SOLUTIONS
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
- GV — GAS VALVE
- CATCH BASIN
- ×15.9 — SPOT ELEVATION
- TREE/BRUSH LINE
- EXISTING BUILDING
- BMUA FORCEMAIN
- PROPERTY LINE
- FENCE LINE
- 230+00 — CENTERLINE STATIONING
- GROUND ELEVATION CONTOUR
- CONCRETE CURB

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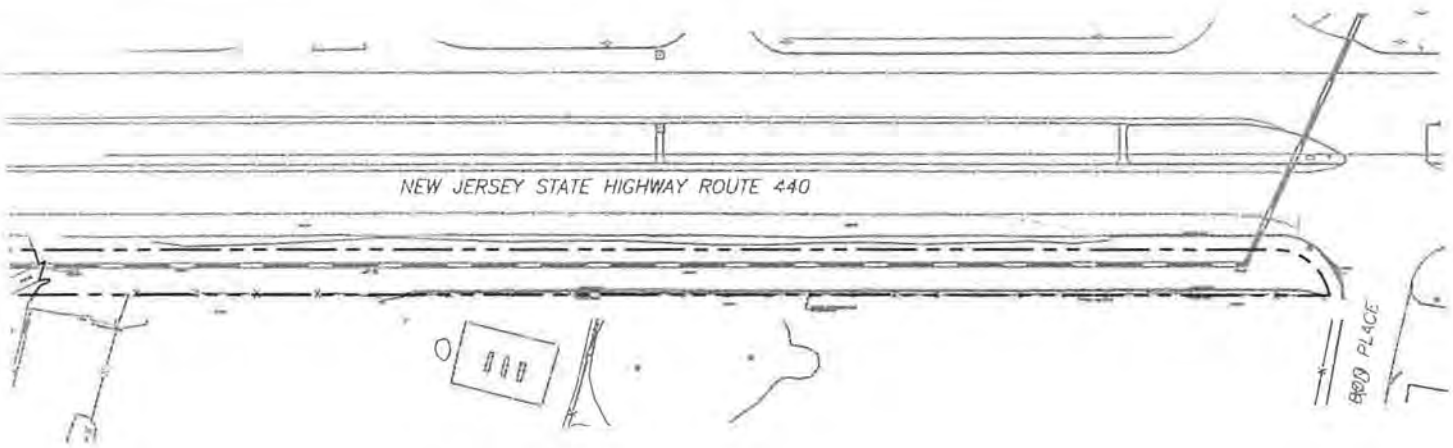
WOOD PROJECT No. 3482170571
DRAWING: 3482170571-6102-A300-0000

PREPARED/DATE: CW 09/20/17
CHECKED/DATE: JH 09/20/17

wood.
ENVIRONMENT & INFRASTRUCTURE SOLUTIONS
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

P:\CADD\HONEYWELL\JERSEY CITY\SA 5\SITE 153\3482170571\610002\xref 8000\3482170571-6102-A300-0000.dwg Thu, 21 Mar 2019 - 10:56am stephen.wingfield



PLAN VIEW

0 50 100 200

SCALE IN FEET

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
- FENCE LINE
- 230+00 — CENTERLINE STATIONING
- GROUND ELEVATION CONTOUR
- CONCRETE CURB

REV	DATE	STATUS	DRFT BY	CHKD BY

WOOD PROJECT No. 3482170571
DRAWING: 3482170571-6102-A300-0000

PREPARED/DATE: CW 09/20/17

CHECKED/DATE: JH 09/20/17

wood.

ENVIRONMENT & INFRASTRUCTURE SOLUTIONS
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 C TY, NEW JERSEY

P:\CAD\HONEYWELL\JERSEY CITY\SA 5\SITE 153\3482170571\610602\deed notice\3482170571-6102-A300-0000.dwg Thu, 21 Mar 2019 - 10:59am dsaint.wingfield

EXHIBIT B

B-1: Restricted Area Map and Engineering Controls As-Builts
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

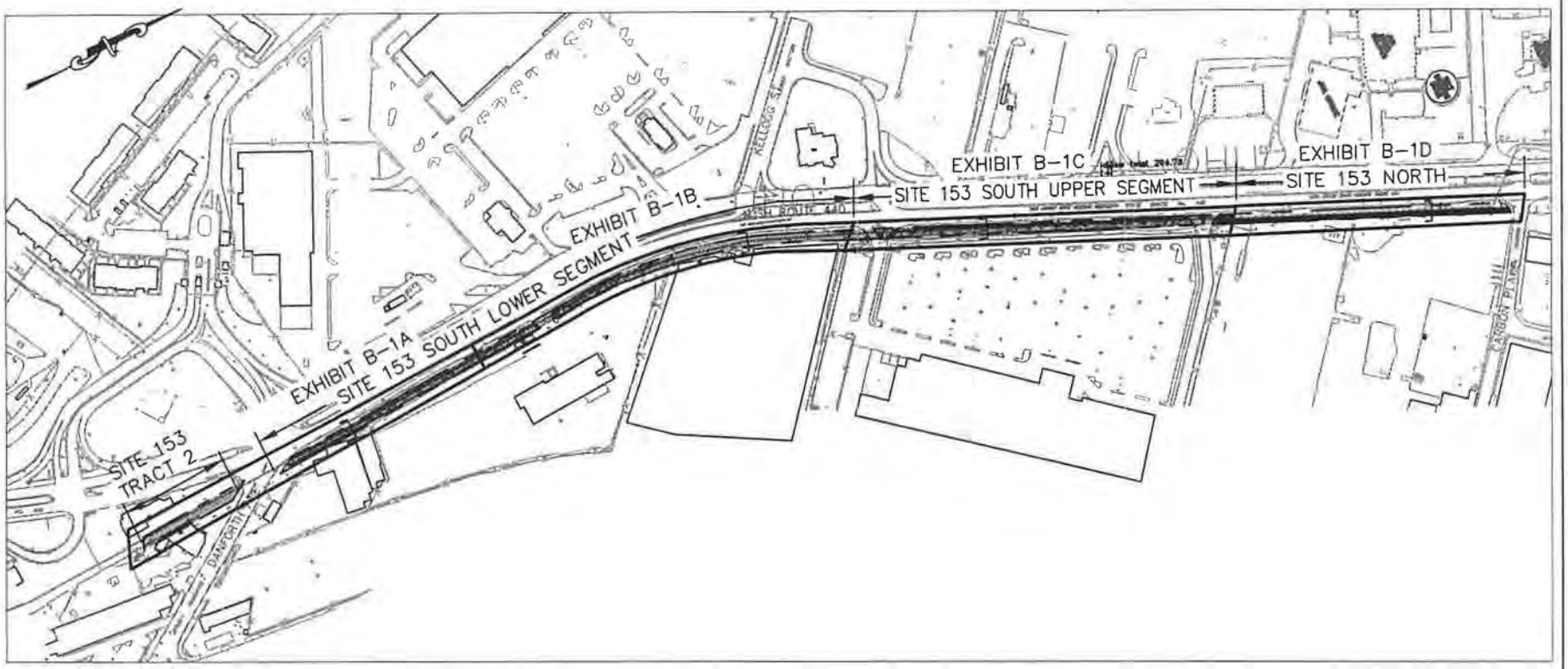
Exhibit Figures B-1A through B-1D includes maps and As-Builts that illustrate the Restricted Area and engineering/institutional controls and soil sample locations.

Exhibit B-2 includes data table which identify the Restricted Area containing soils that are in excess of NJDEP unrestricted use soil cleanup criteria.

Restricted Area Map Notes: Soil contamination exceeding the NJDEP soil criterion of 20 mg/kg is located beneath the existing engineering controls and extends to approximately 10 to 20 feet below ground surface based on hexavalent chromium soil sample results. Within a limited portion of the Site, next to Hudson County Chromate Site 090 (Former Baldwin Steel) and the northern part of Hudson County Chromate Site 117 (former Ryerson Steel), also known as the New Jersey City University (NJCU) West Campus and the Home Depot shopping center, native soils below the fill at depths greater than 20 feet may contain hexavalent chromium above 20 mg/kg due to groundwater conditions.

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



0 200 400 800

SCALE IN FEET

REV	DATE	STATUS	DRFT BY	CHKD BY

WOOD PROJECT No 3482170571
DRAWING: 3482170571-6102-B100-0000

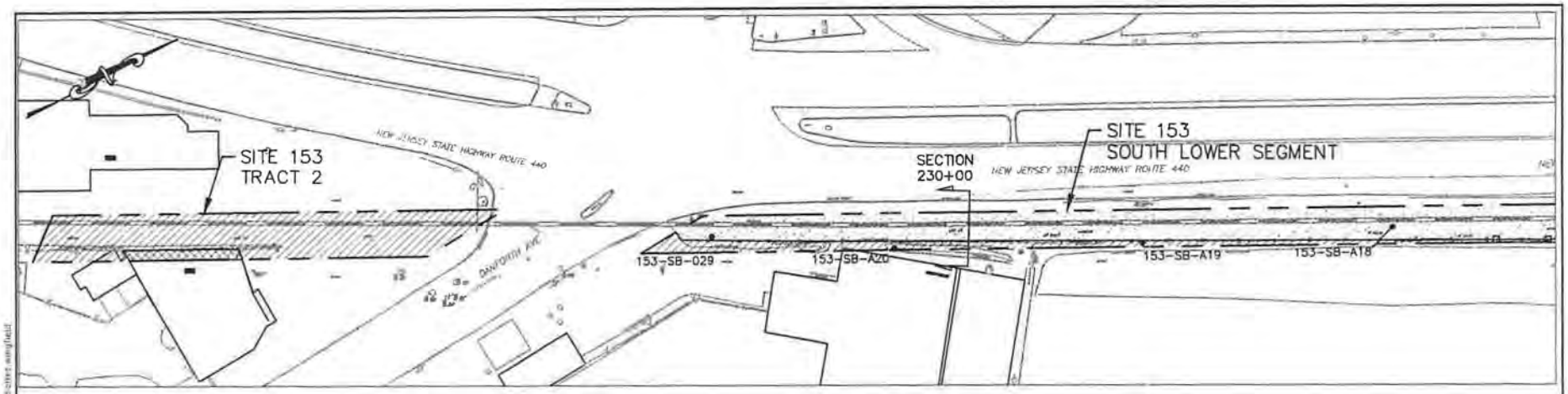
PREPARED/DATE: CW 09/20/17
CHECKED/DATE: JH 09/20/17

wood.

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

EXHIBIT B-1
RESTRICTED AREA MAP KEY
DEED NOTICE
BLOCK 21902, LOT * & BLOCK 26704, LOT 5
SA 5 - SITE 153 FORMER MORRIS CANAL
JERSEY CITY, NEW JERSEY

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PLAN VIEW

0 50 100 200

SCALE IN FEET

LEGEND

153-SB-AXX — SAMPLE LOCATION

CROSS SECTION DIRECTION & LOCATION

DEED RESTRICTION AREA

BMUA FORCEMAIN

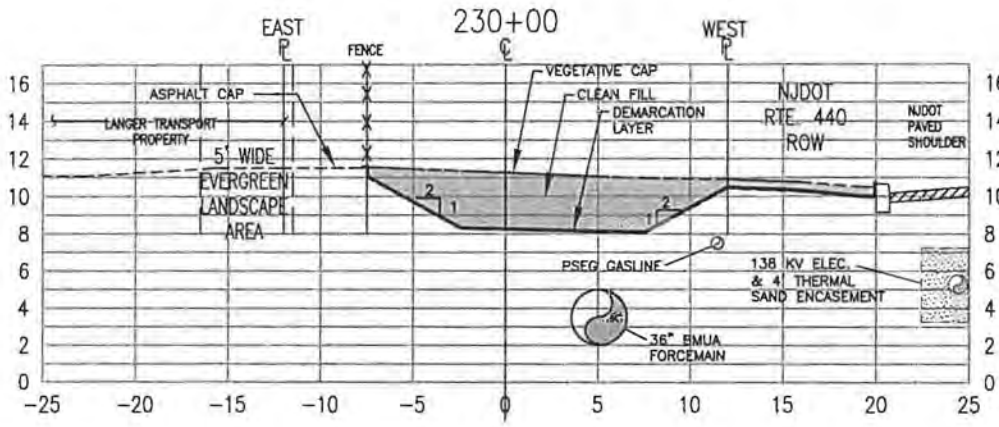
PROPERTY LINE

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 OF THE ENGINEERING CONTROLS IS PROVIDED IN EXHIBIT C-2 OF THIS DEED NOTICE.

REV	DATE	STATUS	DRFT BY	CHKD BY

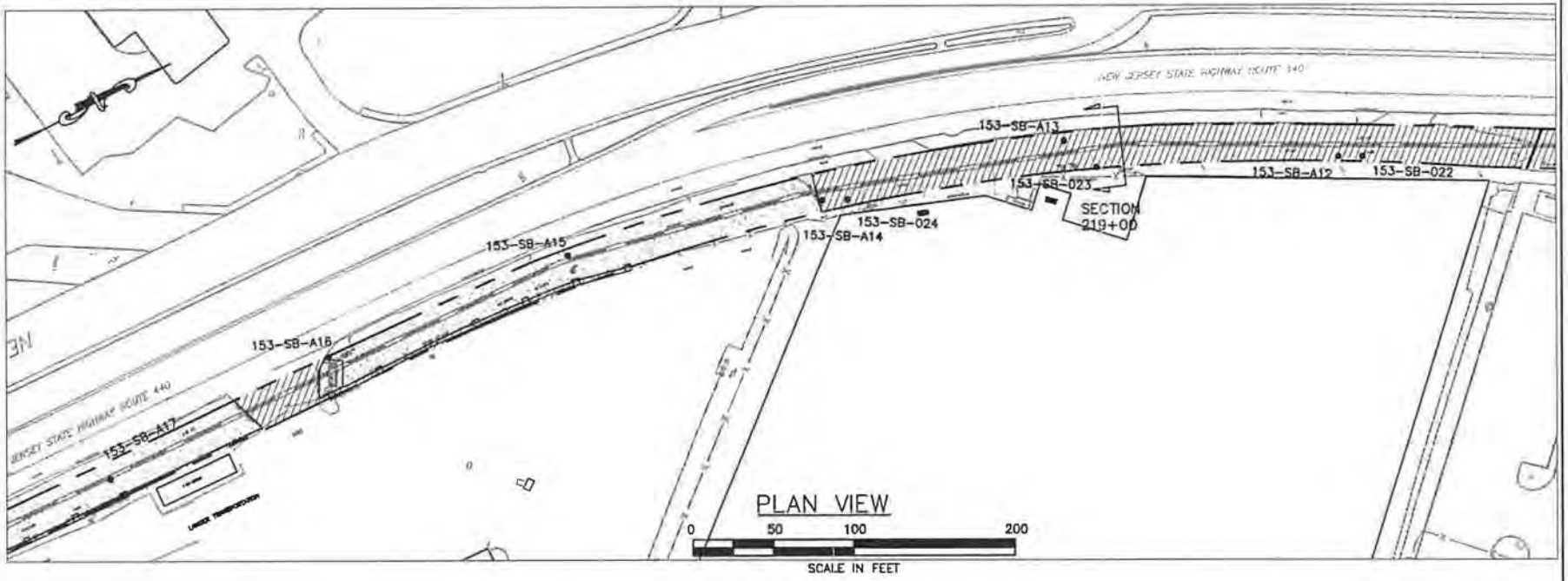
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DRAWING: 3482170571-6102-B100-0300

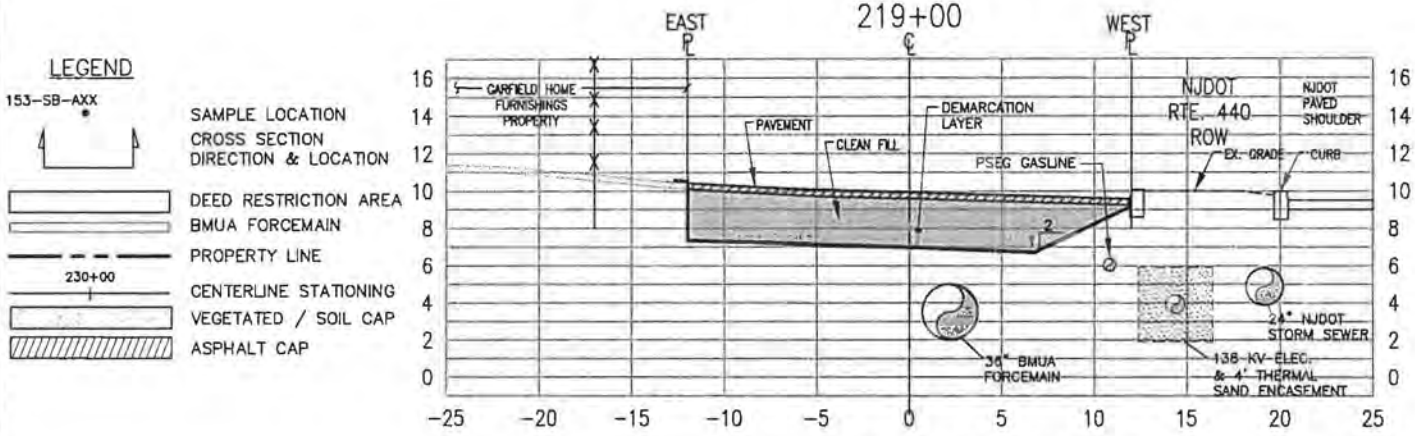
PREPARED/DATE: CW 09/20/17
CHECKED/DATE: JH 09/20/17

wood.
ENVIRONMENT & INFRASTRUCTURE SOLUTIONS
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

A:\CAD\FARMERWELL\JERSEY CITY\SA 5\SITE 153\3482170571\610000\deed notice\3482170571-6102-B100-0000.dwg Mon, 17 Jun 2019 - 3:40pm stephen.wingfield





CROSS SECTION STA. 219+00
SCALE: 1"=10' HORIZONTAL
1"=1' VERTICAL

NOTES:

1. FURTHER DETAILS OF THE ENGINEERING CONTROLS IS PROVIDED IN EXHIBIT C-2 OF THIS DEED NOTICE.

REV	DATE	STATUS	DSFT BY	CHKD BY
	02/27/18			

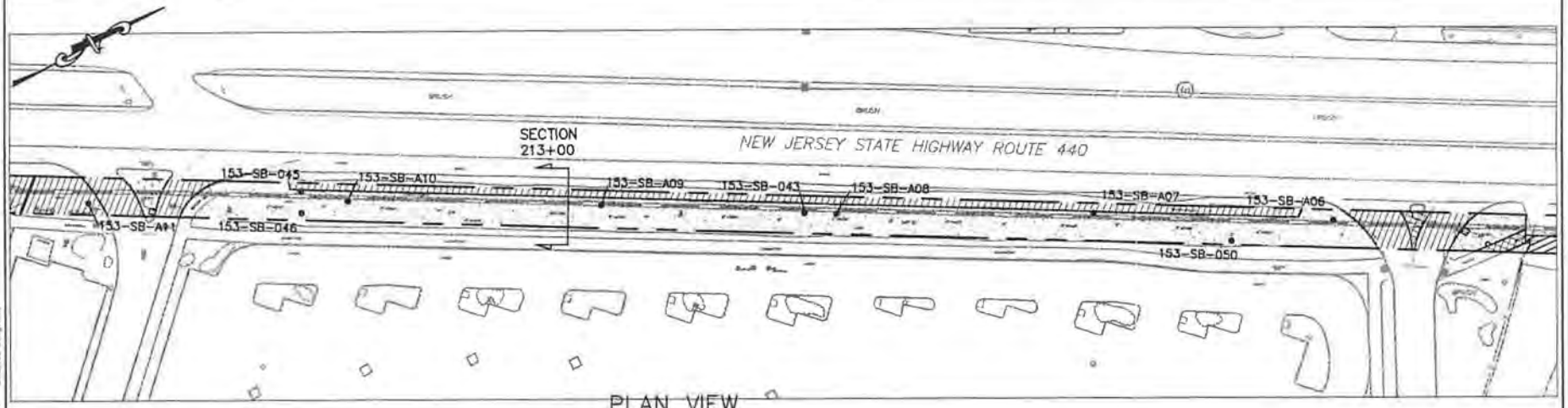
WOOD PROJECT No. 3482170571
DRAWING: 3482170571-6102-B100-0000

PREPARED/DATE: CW 09/20/17
CHECKED/DATE: JH 09/20/17

wood.
ENVIRONMENT & INFRASTRUCTURE SOLUTIONS
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

P:\CAD\HONEYWELL\JERSEY CITY\SA 5\SITE 153\3482170571\B100\Drawing notes\3482170571-6102-B100-0000.dwg - Mon, 12 Jun 2019 - 3:40pm - charles.wright



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

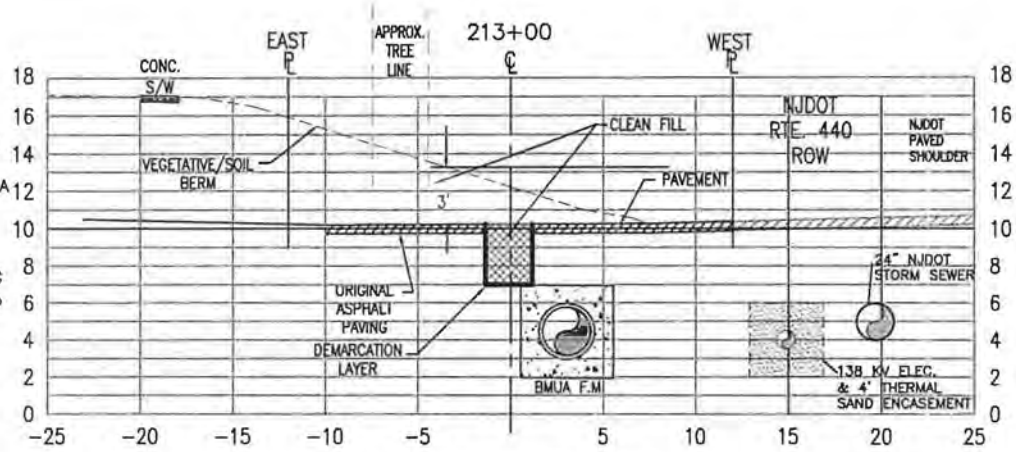
230+00 — CENTERLINE STATIONING

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 OF THE ENGINEERING CONTROLS IS PROVIDED IN EXHIBIT C-2 OF THIS DEED NOTICE.

REV	DATE	STATUS	DRAFT BY	CHKD BY

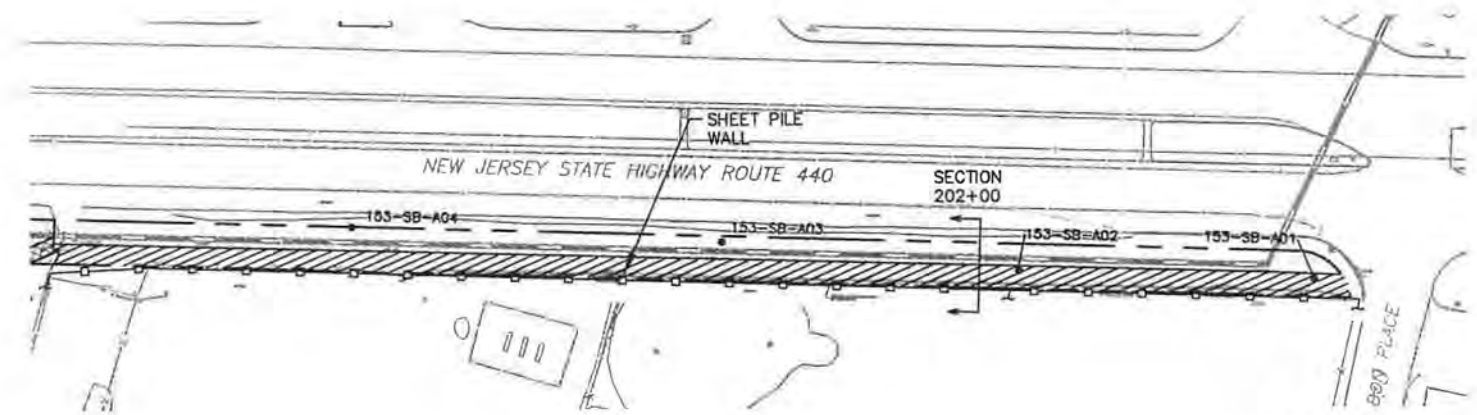
WOOD PROJECT No. 3482170571
DRAWING: 3482170571-6102-B100-0000

PREPARED/DATE: CW 09/20/17
CHECKED/DATE: JH 09/20/17

wood.
ENVIRONMENT & INFRASTRUCTURE SOLUTIONS
300 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

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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

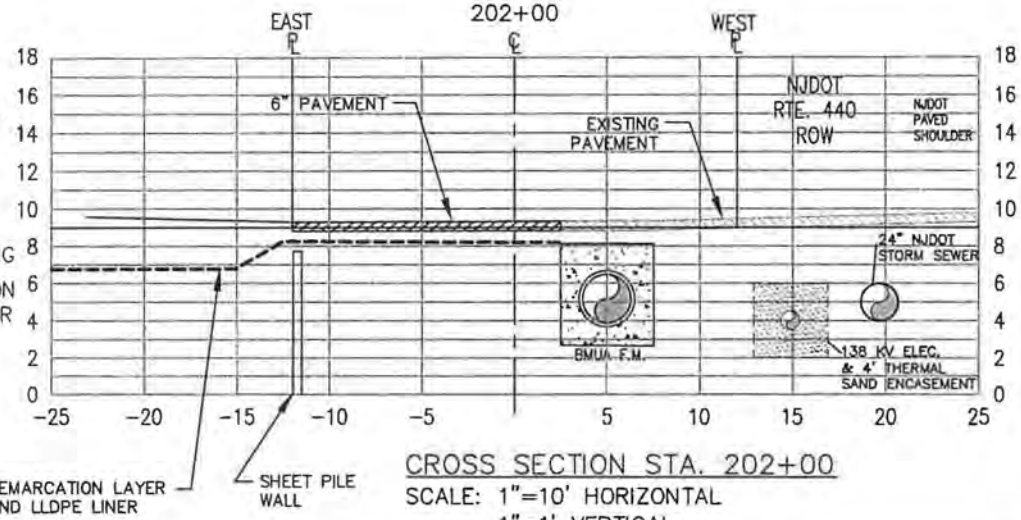
BMUA FORCEMAIN

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 OF DEED NOTICE.

REV	DATE	STATUS	DRAFT BY	CHKD BY

WOOD PROJECT No. 3482170571
DRAWING: 3482170571-6102-B100-0000

PREPARED/DATE: CW 09/20/17
CHECKED/DATE: JH 09/20/17

wood.
ENVIRONMENT & INFRASTRUCTURE SOLUTIONS
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

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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	8.29 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: Deed Notice as Institutional Control
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 of this Deed Notice:

(1) Description and estimated size of the Restricted Area:
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) Description of the restrictions on the Property:
By operation of this Deed Notice and the Consent Decrees, future uses of the Property are limited to open space, utility corridor, transportation, roadway, crossing, or access to adjacent properties. Intrusive activities (i.e., excavation or digging) that may breach the engineering controls (as described in Exhibit C-2) will only occur in conformance with the requirements of this Deed Notice, the Consent Decrees, the LTMPs, and the Worker Training Manual and SOP. See subsections 7A and 7B of the Deed Notice for directions on Alterations, Improvements, Disturbances, and Emergencies.

(3) The objectives of the restrictions:
The restrictions will prevent contact with soils with contaminant concentrations in excess of the NJDEP Soil Remediation Standards or Criteria.

(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 sections (A) and (B) above 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.
- Determination whether or not the land use at the Property has remained consistent with the restrictions in the Deed Notice.
- Determination 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 of the engineering controls:

(1) Description of the engineering controls:

Site 153 North: Engineering controls for this portion of the Property consist of an existing 6-inch thick pavement cap west of the City of Bayonne force main, and east of the City of Bayonne 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.

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) and a nominal 24 feet wide 425 feet 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 Interim Remedial Action Work Plan for Site 153 South Lower Segment submitted to NJDEP on October 15, 2009.

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 Interim Remedial Action Plan for Site 153 South Upper Segment submitted to NJDEP on April 22, 2010.

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.

Access Point Warnings: Access point warning signs installed within sewer manholes on the Property to communicate the presence of and prevent contact with contaminated soils.

(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 be above the applicable NJDEP Soil Remediation Standards or Criteria.

(B) Description of the operation and maintenance:

The Property and all engineering controls will be monitored, maintained, repaired and/or replaced by Honeywell in conformance with the Consent Decrees and LTMPs developed pursuant to the Consent Decrees. 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, dates, name of the inspector, results of the inspections and condition(s) of the engineering controls. Should the visual inspection or activities carried out in conformance with the Long Term Monitoring Plans developed pursuant to the Consent Decrees 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 sections (A) and (B) above 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.
- Determination whether the engineering controls continue to operate as designed.
- Determination 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 South and Site 153 North in the Consent Decree Regarding Sites 79 and 153 South, ECF No. 301 in docket 05-5955, and the Consent Decree Regarding Remediation of the New Jersey City University (NJCU) Redevelopment Area, ECF No. 1506 in docket 95-2097, respectively, which have been entered as orders of the Court in *Hackensack Riverkeeper, Inc. v. Honeywell International, Inc.*, D.N.J., Civ. No. 06-22 (consolidated under Civ. No. 95-2097). The Consent Decree Regarding Sites 79 and 153 South is attached as Exhibit D-1. The Consent Decree Regarding Remediation of the New Jersey City University (NJCU) Redevelopment Area is attached as Exhibit D-2. Collectively, these two documents are referred to throughout this Deed Notice as the "Consent Decrees."

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.

EXHIBIT D-1

Consent Decree Regarding Sites 79 and 153 South

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

UNITED STATES DISTRICT COURT
DISTRICT OF NEW JERSEY

JERSEY CITY MUNICIPAL UTILITIES AUTHORITY, Plaintiff, v. HONEYWELL INTERNATIONAL INC., Defendant.	Consolidated under Docket No. 05-5955 (DMC-PS)
JERSEY CITY INCINERATOR AUTHORITY Plaintiff, v. HONEYWELL INTERNATIONAL INC., Defendant.	Civil Action No. 05-5993 Consolidated under Docket No. 05-5955 (DMC-PS)
HACKENSACK RIVERKEEPER, INC., *et al.* Plaintiffs, v. HONEYWELL INTERNATIONAL INC., *et al.* Defendants.	Civil Action No. 06-22 Consolidated under Docket No. 05-5955 (DMC-PS)

CONSENT DECREE REGARDING SITES 79 AND 153 SOUTH

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RECITALS

Whereas, on June 30, 2003, the district court for the District of New Jersey (hereafter "the Court") issued a Final Judgment in *Interfaith Community Organization v. Honeywell International Inc.*, Civ. No. 95-2097 (DMC) ("*ICO v. Honeywell*"), ordering the remediation of an area designated by the New Jersey Department of Environmental Protection ("NJDEP") as Study Area 7 of the Chromium Chemical Production Waste Sites;

Whereas, on or about December 23, 2005, the Jersey City Municipal Utilities Authority ("JCMUA") filed litigation styled *Jersey City Municipal Utilities Authority v. Honeywell International Inc.*, D.N.J., Civ. No. 05-5955 (DMC), bringing claims against Honeywell International Inc. ("Honeywell") under, among other grounds, Section 7002 of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. § 6972, seeking remediation of chromium contamination on property then owned by JCMUA and other relief;

Whereas, on or about December 28, 2005, the Jersey City Incinerator Authority ("JCIA") filed litigation styled *Jersey City Incinerator Authority v. Honeywell International Inc.*, D.N.J., Civ. No. 05-5993 (DMC), bringing claims against Honeywell under, among other grounds, Section 7002 of RCRA seeking remediation of chromium contamination on property then owned by JCIA and other relief;

Whereas, on or about January 4, 2006, Hackensack Riverkeeper, Inc., William Sheehan, Winston Clarke, and Lawrence Baker (collectively, "Riverkeeper") filed litigation styled *Hackensack Riverkeeper, Inc. v. Honeywell International Inc.*, D.N.J., Civ. No. 06-0022 (DMC), bringing a claim against Honeywell under Section 7002 of RCRA seeking remediation of chromium contamination in soils, groundwater, surface waters, and sediments associated with various properties collectively designated by NJDEP as Study Area 5, Study Area 6 North,

which includes the properties formerly owned by the City of Jersey City, JCMUA, and JCIA (collectively "the Jersey City Entities"), and Study Area 6 South, as well as a parcel adjacent to Study Area 5 owned by Regnal Reality, Inc.;

Whereas, Riverkeeper also named as defendants in *Riverkeeper v. Honeywell* owners of the properties comprising Study Areas 5, 6 North, and 6 South, including New Jersey City University, Bayonne Municipal Utilities Authority ("BMUA"), Jersey City Fields LLC ("Jersey City Fields"), Bob Ciasulli, Elisabeth and Rafael Rosario, Michael Vo, and Regnal Realty, as necessary party defendants pursuant to Rule 19 of the Federal Rules of Civil Procedure;

Whereas, *JCMUA v. Honeywell, JCIA v. Honeywell,* and *Riverkeeper v. Honeywell* were consolidated by the Court under the caption *Jersey City Municipal Utilities Authority v. Honeywell International Inc.*, D.N.J., Civ. No. 05-5955 (DMC) ("Consolidated Litigation");

Whereas, in the Consolidated Litigation, Riverkeeper has alleged that Honeywell bears responsibility for the presence and remediation of chromite ore processing residue ("COPR") and chromium contaminated soils and groundwater on the Study Area 5 properties;

Whereas, Study Area 5 is comprised of five sites designated by NJDEP as Sites 079, 090, 117, 153, and 184;

Whereas, Honeywell owns the property that comprises Site 153 and such property is subject to an easement held by BMUA for purposes of its operation and maintenance of the pipeline that runs the length of Site 153 and carries sewage from the City of Bayonne to the regional wastewater treatment plant operated by the Passaic Valley Sewerage Commission;

Whereas, based on a recent survey of Honeywell's Site 153 property, there is a question as to the property line between Honeywell's property and the Regnal Realty Property. Langer Transport operates a trucking operation on the Regnal Realty Property. Langer Transport and

Regnal Realty, Inc. are owned by the same entity. Based on the survey, Honeywell believes that Langer Transport's operations encroach upon Honeywell's property;

Whereas, Bob Ciasulli, Elisabeth and Rafael Rosario, and Michael Vo own the properties that comprise Site 79. The Rosario and Vo properties are residential. The Ciasulli property is currently used as an auto dealership with sales and service operations;

Whereas, Bob Ciasulli and Honeywell asserted cross-claims against each other in the Consolidated Litigation, and Honeywell has asserted cross-claims against Michael Vo and Elisabeth and Rafael Rosario;

Whereas, BMUA and Honeywell asserted cross-claims against each other in the Consolidated Litigation, which have been settled and dismissed pursuant to an Order of the Court dated January 7, 2008;

Whereas, on April 21, 2008, the Court entered the Consent Decree Regarding Remediation and Redevelopment of Study Area 6 North ("Study Area 6 North Consent Decree"), resolving issues between Honeywell, Riverkeeper, and the Jersey City Entities related to chromium contamination at Study Area 6 North;

Whereas, on May 28, 2008, the Court entered the Consent Order on Sediment Remediation and Financial Assurances ("Sediment Consent Order"), resolving issues related to the remediation of chromium contaminated sediments in the Hackensack River in the vicinity of Study Areas 5, 6, and 7;

Whereas, on September 3, 2008, the Court entered the Deep Overburden and Bedrock Groundwater Remedies Consent Order ("Deep Groundwater Consent Order"), resolving all issues related to the remediation of deep overburden and bedrock groundwater in both *ICO v.*

Honeywell and the Consolidated Litigation, with the exception of any issues that might be related to the Regnal Realty Property;

Whereas, on December 29, 2008, the Court entered the Consent Decree and Order Regarding Remediation and Redevelopment of Study Area 6 South ("Study Area 6 South Consent Decree"), resolving issues between Honeywell and Riverkeeper related to chromium contamination at Study Area 6 South;

Whereas, the Parties to this Consent Decree believe that it is in their mutual interest to resolve their differences so that Honeywell can remediate environmental conditions at the Site 079 Ciasulli Property and Site 153 South in order to ensure the continued protection of human health and the environment; and

Whereas, each of the actions to implement this Consent Decree have been fully considered by Honeywell, Riverkeeper, Ciasulli, and BMUA, as a means to accomplish the aforesaid purposes of this settlement and each of the Parties consents be bound by the provision set forth herein;

NOW, THEREFORE, IT IS HEREBY ORDERED AND DECREED AS FOLLOWS:

ARTICLE I: DEFINITIONS

For purposes of this Consent Decree, the following terms shall have the meanings set forth in this Article:

1. **BMUA** shall mean the Bayonne Municipal Utilities Authority or its successors in interest with regard to the easement and sewer pipeline that runs the length of Site 153 South.

2. **COPR** shall mean Chromite Ore Processing Residue.

3. **Chromium Remedy or Chromium Remediation** shall mean the remedy set forth in Article III for the particular site and collectively, they are referred to herein as the **Chromium Remedies**. **Initial Chromium Remedy or Remedies** shall mean the remedies set for in Article III, except for paragraphs 61 and 71. **Final Chromium Remedy or Remedies** shall mean the further remedial activities set for in paragraph 61 and/or paragraph 71.

4. **Ciasulli** shall mean Bob Ciasulli, whose legal name is Robert G. Ciasulli, the current owner of the Site 79 Ciasulli Property and his successors in interest to the Site 79 Ciasulli Property.

5. **Consolidated Litigation** shall mean *Jersey City Municipal Utility Authority v. Honeywell International Inc.*, D.N.J., Civ. No. 05-5955 (DMC), *Jersey City Incinerator Authority v. Honeywell International Inc.*, D.N.J., Civ. No. 05-5993 (DMC), and *Hackensack Riverkeeper, Inc. v. Honeywell International Inc.*, D.N.J., Civ. No. 06-022 (DMC).

6. **Court** shall mean the United States District Court of the District of New Jersey, which has jurisdiction over the Consolidated Litigation.

7. **Deep Groundwater Consent Order** shall mean the Deep Overburden and Bedrock Groundwater Remedies Consent Order entered by the Court on September 3, 2008, in both *ICO v. Honeywell* and the Consolidated Litigation.

8. **Final Chromium Remedy or Remedies** shall have the meaning set forth in paragraph 3.

9. **Greater than 20 Soils** shall mean those soils in which the hexavalent chromium concentration in the top 20 feet of soil below ground surface is greater than 20 mg/kg.

10. **Honeywell** shall mean Honeywell International Inc. and its subsidiary 425-445 Route 440 Property LLC.

11. ***ICO v. Honeywell*** shall mean *Interfaith Community Organization v. Honeywell International Inc.*, D.N.J., Civ. No. 95-2097 (DMC).

12. **Including** shall mean including, but not limited to.

13. **Initial Chromium Remedy or Remedies** shall have the meaning set forth in paragraph 3.

14. **NJDEP** shall mean the New Jersey Department of Environmental Protection.

15. **NJDEP Chromium Policy** shall mean the chromium remediation policy set forth in the memorandum from Lisa P. Jackson to Irene Kropp on February 8, 2007, and attached as Exhibit A. The NJDEP Chromium Policy is also known as the NJDEP Chromium Directive.

16. **Non-Honeywell Parties** shall mean Riverkeeper, BMUA, and Ciasulli, except that the term shall exclude BMUA or Ciasulli, wherever BMUA or Ciasulli would not be a Non-Honeywell Defendant with an Interest.

17. **Non-Honeywell Defendant with an Interest** shall mean any Non-Honeywell Defendant who has an ownership or other real property interest in property that will be affected by an action or decision under this Consent Decree.

18. **Party or Parties** shall mean any or all of Riverkeeper, Honeywell, BMUA, or Ciasulli.

19. **RCRA** shall mean the Resource Conservation and Recovery Act, 42 U.S.C. § 6901, *et seq.*, as amended.

20. **Regnal Realty Property** shall mean the property owned by Regnal Realty, consisting of Block 1288.2, Lot 1, located at 420 Route 440, Jersey City, New Jersey.

21. **Riverkeeper** shall mean Hackensack Riverkeeper, Inc., William Sheehan, Reverend Winston Clarke, and Lawrence Baker.

22. **Route 440** shall mean New Jersey state highway Route 440, a portion of which is part of Site 153 South.

23. **Sediment Consent Order** shall mean the Consent Order on Sediment Remediation and Financial Assurances, entered by the Court in *ICO v. Honeywell* and the Consolidated Litigation on May 28, 2008.

24. **Shallow Groundwater** or **Shallow Level of Groundwater** shall mean groundwater (i) above the meadow mat, (ii) groundwater at stratigraphically equivalent depths in locations where there is no meadow mat, and (iii) groundwater that is contaminated by recent contact with COPR or other chromium contaminated soil above the meadow mat and subsequently flows downward through or past the meadow mat into the upper portion of the lacustrine sediments. This does not include groundwater found in the bedrock, the deep zone, or any plume of contamination that is in both the intermediate and deep zones, as those zones are defined in the Final Groundwater Investigation Report, prepared in *ICO v. Honeywell*, dated February 2007.

25. **Site 79** shall mean all property in Study Area 5 owned by Ciasulli, Elisabeth and Rafael Rosario, and Michael Vo.

26. **Site 79 Ciasulli Property** shall mean the property within Site 79 owned by Ciasulli, consisting of Block 1291, Lot 76, and Block 1292, Lots 1F, 47, 48, 53, and 54PL, located at 540 Route 440, Jersey City, New Jersey.

27. **Site 79 Residential Properties** shall mean the properties within Site 79 owned by Elisabeth and Rafael Rosario and Michael Vo, consisting of Block 1292, Lot 49, and Block 1292, Lot 50, located at 93 and 95 Fisk Street, Jersey City, New Jersey, respectively.

28. **Site 153** shall mean Site 153 North and Site 153 South.

29. **Site 153 North** shall mean that portion of Site 153 that abuts Sites 184 and 90 and is bounded to the north by Carbon Place and to the south by the southern property line of Site 90.

30. **Site 153 South** shall mean that portion of Site 153 that abuts Site 117, the Garfield Home Furnishing Center, and the Regnal Realty Property, and is bounded to the north by the southern property line of Site 90 and to the south by Danforth Avenue. Site 153 South is comprised of the Site 153 South Lower Segment and Site 153 South Upper Segment.

31. **Site 153 South Lower Segment** shall mean that portion of Site 153 South that is bounded to the north by the southern property line of Site 117 and to the south by Danforth Avenue.

32. **Site 153 South Upper Segment** shall mean that portion of Site 153 South that abuts Site 117.

33. **Soil** shall mean soils, historic fill, COPR, or any combination thereof.

34. **Study Area 5** shall mean that property designated by NJDEP as Sites 79, 90, 117, 153, and 184 of the Chromate Chemical Production Waste Sites including (a) all such property owned by Bob Ciasulli, consisting of Block 1291, Lot 76, and Block 1292, Lots 1F, 47, 48, 53, and 54PL, located at 540 Route 440, Jersey City, New Jersey, (b) all such property owned by Elisabeth and Rafael Rosario, consisting of Block 1292, Lot 49, located at 93 Fisk Street, Jersey City, New Jersey, (c) all such property owned by Michael Vo, consisting of Block 1292, Lot 50, located at 95 Fisk Street, Jersey City, New Jersey, (d) all such property owned by Jersey City Fields LLC, consisting of Block 1285.5, Lot 1, located at 440 Route 440, Jersey City, New Jersey, (e) all such property owned by 425/445 Route 440 Property LLC, consisting of Block 1289.5, Lot E, Jersey City, New Jersey, and (f) all such property owned by NJCU, consisting of Block 1286, Lots 5 and 6D, and Block 1286.5, Lots 1 and 2, Jersey City, New Jersey.

35. **Study Area 6** shall mean Study Area 6 North and Study Area 6 South, collectively.

36. **Study Area 6 North** shall mean the property comprising Sites 87 and 88 of the Chromate Chemical Production Waste Sites designated by NJDEP, which is subject to the Study Area 6 North Consent Decree.

37. **Study Area 6 North Consent Decree** shall mean the Consent Decree and Order Regarding Remediation and Redevelopment of Study Area 6 North, entered by the Court on April 21, 2008, in the Consolidated Litigation.

38. **Study Area 6 South** shall mean the property comprising Sites 73, 124, 125, 134, 140, and 163 of the Chromate Chemical Production Waste Sites designated by NJDEP, which is subject to the Study Area 6 South Consent Decree.

39. **Study Area 6 South Consent Decree** shall mean the Consent Decree and Order Regarding Remediation and Redevelopment of Study Area 6 South, entered by the Court on December 29, 2008, in the Consolidated Litigation.

40. **Study Area 7** shall mean (a) that property currently owned by Bayfront Redevelopment LLC, located at 425 and 445 Route 440, Jersey City, Hudson County, New Jersey, and (b) that property currently owned by Bayfront Redevelopment LLC, located at 465 Route 440, Jersey City, Hudson County, New Jersey.

41. **Subject to Review and Comment by the Non-Honeywell Parties** shall mean that Honeywell shall submit an investigation, plan, report, or other document to the Non-Honeywell Parties. Non-Honeywell Parties shall have the right to make comments, to which Honeywell shall respond. In the event that the Parties are not able to reach agreement, any Party

may seek resolution of the dispute by motion to the Court, but the Parties are not required to seek a ruling by the Court.

42. **Technical Requirements for Site Remediation or Tech Regs** shall mean the NJDEP Technical Requirements for Site Remediation, N.J.A.C. Chapter 26E, as amended.

43. **Unrestricted Use No Further Action Determination** shall mean a No Further Action Letter issued by NJDEP pursuant to N.J.A.C. § 7:26C-2.6(c)(1)(i) or a Remedial Action Outcome issued by a New Jersey Licensed Site Remediation Professional in accordance with regulations then in effect stating that the site meets the requirements for Unrestricted Use.

44. **Unrestricted Use** shall mean that the contaminated medium is restored to a condition or quality suitable for all uses.

ARTICLE II: SCOPE OF THE CONSENT DECREE, JURISDICTION, AND CLAIMS RESOLVED

45. This Court has jurisdiction over the Parties and subject matter of the Consolidated Litigation pursuant to Section 7002 of RCRA, 42 U.S.C. § 6972, and 28 U.S.C. § 1331.

46. For purposes of this Consent Decree, the Riverkeeper Complaint in the Consolidated Litigation states claims upon which relief may be granted against Honeywell with regard to the Site 79 Ciasulli Property and Site 153 South.

47. In the event that this Decree is not terminated by one or more Parties pursuant to paragraph 89, this Consent Decree resolves, settles, and satisfies all claims by Riverkeeper against Honeywell with respect to (i) soils and shallow groundwater at the Site 79 Ciasulli Property and (ii) soils at Site 153 South, except any such soils that might be inside of the current Langer Transport fence line. This Consent Decree does not resolve any claims regarding the Site 79 Residential Properties or Site 153 North. This Consent Decree does not resolve any claims regarding any soils at Site 153 South that might be inside of the current Langer Transport fence

line. The Consent Decree does not resolve any claims regarding shallow groundwater contamination at Site 153 South. Honeywell and Riverkeeper reserve their respective rights and defenses regarding these unresolved claims. In the event that this Decree is not terminated by one or more Parties pursuant to paragraph 89, this Consent Decree resolves, settles, and satisfies all claims by Honeywell against Ciasulli in this Litigation and by Ciasulli against Honeywell in this Litigation.

48. Nothing in this Consent Decree shall be construed or interpreted to waive any claim or defense any Party has asserted or may assert against any of the parties to the Consolidated Litigation or any third party, except as explicitly stated herein.

49. This Consent Decree does not constitute an admission of liability on the part of any Party with respect to any claims, cross-claims, or counter-claims in the Consolidated Litigation or with respect to any claims by any third party.

ARTICLE III: CHROMIUM REMEDIATION

A. General Terms and Requirements

50. **Responsibility for Implementation of Chromium Remediation.** As between the Parties, Honeywell shall be responsible for and shall undertake remediation of COPR and chromium present at the Site 79 Ciasulli Property and Site 153 South at Honeywell's sole cost and expense. Honeywell shall perform the remediation of COPR and chromium present at the Site 79 Ciasulli Property and Site 153 South in accordance with the terms of this Consent Decree as set forth below.

51. **Consistency of the Chromium Remedy with NJDEP Guidance and Remedial Action Work Plans.** The Initial Chromium Remedies shall be consistent with the Technical Requirements for Site Remediation, the NJDEP Chromium Policy, and any Remedial Action

Work Plan or other work plan approved by NJDEP for the Site 79 Ciasulli Property or Site 153 South, including any modifications or addenda thereto approved by NJDEP. Prior to submitting any Remedial Action Work Plan or other work plan for the Site 79 Ciasulli Property or Site 153 South to NJDEP, Honeywell shall take all reasonable steps to ensure that the plan is consistent with the Chromium Remedies set forth herein. In the event of any conflict or inconsistency between this Consent Decree and any Remedial Action Work Plan approved by NJDEP, the provisions of this Consent Decree shall control. However, nothing in this Consent Decree shall limit NJDEP's authority to require Honeywell, other Parties, or third-parties from undertaking remedial activities at the Site 79 Ciasulli Property or Site 153 South in addition to those required by this Consent Decree.

52. **General Scope of the Chromium Remedies.** Due to the current uses of the Site 79 Ciasulli Property and Site 153 South and NJDEP's anticipated establishment of formal soil remediation standards for hexavalent chromium, remediation of the chromium contamination of the soils will take place in two phases, an initial phase and a final phase. The Initial Chromium Remedies shall address soil containing hexavalent chromium concentrations greater than 20 mg/kg within the top 20 feet of soil below ground surface as set forth herein and shall be consistent with the requirements set forth in this Article. The Final Chromium Remedies shall address the remediation of hexavalent chromium in soils as necessary to meet NJDEP's requirements in effect at the time further remedial activities are required under this Consent Decree. The Parties understand and agree that Honeywell is agreeing to use soil with a hexavalent chromium concentration of less than 1 mg/kg as backfill solely as a partial condition of settlement and that the requirement to use soil with a hexavalent chromium concentration of less than 1 mg/kg as backfill is applicable only to Site 153 South and shall not be used as a

precedent for any other site. The Parties also understand and agree that Riverkeeper is agreeing to use the requirements set forth in the NJDEP Chromium Policy related to Greater than 20 Soils for purposes of the Initial Chromium Remedies as a partial condition of this settlement and that such agreement shall not be used in any way to prejudice its advocacy for final remediation herein or at any other site at a different level. The only groundwater aquifer addressed by this Consent Decree is the shallow aquifer. The remediation of deep overburden and bedrock groundwater, including source control, is addressed in the Deep Groundwater Consent Order.

53. **Development of a Schedule for the Chromium Remedies.** Within 90 days of entry of this Consent Decree, Honeywell shall propose a Master Schedule, subject to review and comment by the Non-Honeywell Parties, for the implementation of the Initial Chromium Remedies. The Master Schedule shall incorporate the following dates:

(a) A date for the submission of an amended Remedial Action Work Plan for the Site 79 Ciasulli Property to NJDEP based on the Initial Chromium Remedy for the Site 79 Ciasulli Property set forth in this Consent Decree;

(b) Dates for the submission of workplan/design documents for the Upper Segment and Lower Segment of Site 153 South to NJDEP based on the Initial Chromium Remedy for Site 153 South set forth in this Consent Decree;

(c) Dates for the initiation and completion of the Initial Chromium Remedy for the Site 79 Ciasulli Property; and

(d) Dates for the initiation and completion of the Initial Chromium Remedy for Site 153 South.

As such time as it becomes appropriate, Honeywell shall propose amendments to the Master Schedule, subject to review and comment by the Non-Honeywell Parties, for implementation of the Final Chromium Remedies.

54. **Demolition and Grading Activities.** During demolition and grading activities for the Chromium Remedies, adequate measures shall be taken to protect site workers and the community from airborne dusts and exposure to contaminated soils in accordance with applicable laws, regulations, and health and safety standards.

55. **Permits and Authorizations.** Honeywell shall obtain all necessary federal, state, and local permits and authorizations to carry out the Chromium Remedies as set forth in this Article. Ciasulli and BMUA agree to cooperate with Honeywell in the applications for any such permits, authorizations, or approvals. Such cooperation shall include providing information or data with respect to permit applications, co-signing permit applications, and allowing access to the Site to obtain information necessary for the permits.

B. Chromium Remedy for the Site 79 Ciasulli Property

56. **Hotspot Excavation.** Honeywell shall excavate Greater than 20 Soils in the vicinity of soil borings 79-SB-004 and 79-SB-D005 in the approximate area set forth on the figure attached as Exhibit B. Based on existing data, it is anticipated that such excavation shall remove soils in the top two to four feet below ground surface. Honeywell shall dispose of excavated Greater than 20 Soils off-site at a waste disposal facility licensed to accept such waste.

57. ***In Situ* Treatment.** Honeywell shall conduct *in situ* treatment of Greater than 20 Soils with a chemical reductant in the approximate area shown on Exhibit B in accordance with the treatment protocol set forth in Exhibit C. Honeywell's treatment obligations under this Consent Decree shall not be subject to confirmation sampling and Honeywell shall have no

obligation under this Consent Decree to treat soils at the Site 79 Ciasulli Property beyond the requirements set forth in the treatment protocol.

58. **Asphalt Cap Remedy.** Until such time as further remedial action may be required pursuant to paragraph 61, Honeywell shall inspect and maintain the asphalt cover at the Site 79 Ciasulli Property over all Greater than 20 Soils in approximately the area shown on Exhibit B and hereinafter referred to as the "Site 79 Capped Area."

59. **Deed Notice.** Within 90 days of entry of this Consent Decree, a deed notice, substantially in the form attached as Exhibit D and including the following provisions, shall be recorded by Ciasulli for the Site 79 Ciasulli Property pursuant to paragraph 60:

(a) Notice that the asphalt cover for the Site 79 Capped Area, also referred to as the Restricted Area in the deed notice (Exhibit D), constitutes an engineering control that must be maintained in accordance with the Tech Regs;

(b) An easement providing access to Honeywell for the purposes of inspecting, repairing, and maintaining the asphalt cover; and

(c) A restriction limiting the future uses of the Site 79 Capped Area to commercial, retail, or open space, including continued use as an auto dealership.

The deed notice shall encumber the Site 79 Ciasulli Property until such time as further remedial activities are undertaken pursuant to paragraph 61 and an Unrestricted Use No Further Action Determination is issued for the Site 79 Ciasulli Property. During the period in which the Site 79 Ciasulli Property is encumbered by the deed notice, Ciasulli and Honeywell shall comply with the requirements of the deed notice. At the time the biennial reports required by the deed notice

are submitted to NJDEP, Ciasulli and Honeywell shall provide copies of the reports to Riverkeeper. The deed notice shall be enforceable against Ciasulli and Honeywell in the Consolidated Litigation.

60. **Recording of the Deed Notice.** The deed notice and this Consent Decree shall be recorded pursuant to N.J.S.A. §§ 46:15-1.I, 46:16-1.1, 46:16-2, and 58:10B-13 in the office of the Hudson County Register and a conspicuous reference to the Consent Decree and Deed Notice shall be included in all instruments concerning title to the Site 79 Ciasulli Property as long as the property is required to be encumbered by the deed notice pursuant to paragraph 59.

61. **Further Remedial Activities.** Within 90 days of receiving written notice from Ciasulli that he wants to have the opportunity to use, offer, or market the Site 79 Ciasulli Property for residential purposes, Honeywell shall propose further remedial action at the Site 79 Ciasulli Property as necessary to meet NJDEP's requirements for Unrestricted Use of the property in effect at that time and a schedule for undertaking such further remedial action. Such proposal and schedule shall be presented by Honeywell in a document that is subject to review and comment by the Non-Honeywell Parties. Following such review and comment by the Non-Honeywell Parties, Honeywell shall undertake the further remedial action pursuant to the schedule. To the extent that Honeywell wants to rely on treatment conducted pursuant to paragraph 57 as having reduced the hexavalent chromium concentration in the soils to the level that would make further remediation unnecessary under this paragraph, Honeywell shall conduct post-treatment sampling to demonstrate that the treatment has resulted in permanent hexavalent chromium concentrations of less than that required to meet NJDEP's requirement for Unrestricted Use of the property in effect at the time. Honeywell shall propose a program of post-treatment monitoring in a document that is subject to review and comment by the Non-

Honeywell Parties. In the event that Honeywell fails to make the demonstration required by this paragraph with respect to treatment, Honeywell shall undertake further remedial actions as required herein. The Parties shall use all reasonable efforts to ensure that the property is remediated pursuant to this paragraph in a timely manner in coordination with, and so as not to unreasonably delay, planned redevelopment.

62. **Shallow Groundwater.** The parties agree that chromium levels in shallow groundwater at Site 79 do not exceed the current New Jersey Ground Water Quality Standards and that, as part of the Initial Chromium Remedy, no shallow groundwater remediation is required for the Site 79 Ciasulli Property. Shallow groundwater remediation may be required in conjunction with further remedial activities pursuant to paragraph 61. At the time that it makes its proposal pursuant to paragraph 61, Honeywell shall address whether shallow groundwater remediation is required to meet NJDEP's requirements for Unrestricted Use of the property in effect at the time and, if necessary, incorporate such groundwater remediation into its proposal. In the meantime, Honeywell shall conduct water level monitoring pursuant to paragraph 80(a)(vi) to ensure that chromium contaminated shallow groundwater is not migrating from Route 440 to the Site 79 Ciasulli Property.

63. **Disturbance of the Cap.** In the event of any planned actions in the Site 79 Capped Area that will involve disturbance of the cap, Ciasulli shall notify the Parties reasonably in advance of the planned action(s) and the date(s) of the planned action. In the event of any emergency actions in the Site 79 Capped Area that will involve disturbance of the cap, Ciasulli shall notify the Parties in a timely manner of the emergency action and the date on which it was undertaken. Honeywell shall provide notice of such disturbance to adjacent property owners in the manner described in paragraph 81.

64. **Inspection by Riverkeeper.** After providing the Parties with seven days advance written notice, Riverkeeper shall have the right to enter the Site 79 Ciasulli Property annually for purposes of inspecting the cap provided that the time for such inspection shall be coordinated with Ciasulli so as not to unreasonably disrupt Ciasulli's business.

65. **Annual Certification to Court.** Annually, beginning on the anniversary date of the entry of this Consent Decree and continuing until such time as the Site 79 Ciasulli Property is no longer encumbered by the deed notice pursuant to paragraph 59, Ciasulli shall submit a certification to the Court regarding his compliance with the Consent Decree and the deed notice. Such certification shall identify all uses of the property since the date of the last annual certification. Honeywell and Riverkeeper will remind Ciasulli of this annual obligation.

66. **Conveyance of the Site 79 Ciasulli Property.** Within 30 days of conveyance of all or any part of the property, Ciasulli shall provide notice of such conveyance to the Court and the Parties. Such notice shall be accompanied by appropriate papers adding the new owner as a party to the Consent Decree with respect to only that portion of the property acquired. The Parties agree to cooperate in the addition or substitution of the new owner as a party to the Consent Decree. Once added or substituted, the new owner shall have all of the rights and responsibilities of this Consent Decree applicable to Ciasulli.

C. Chromium Remedy for Site 153 South

67. **Site 153 South Lower Segment Remedial Action.** Honeywell shall remediate soils within the Site 153 South Lower Segment as follows:

(a) Except as limited by the provisions of paragraph 67(a)(i)- (iv), and subject to Honeywell's ability to obtain all necessary permits and approvals, Honeywell shall excavate all soils to a depth of three feet below ground

surface and shall dispose of or recycle all excavated soils at a facility licensed to accept such material.

(i) The excavation adjacent to Route 440 shall be conducted at a sufficient slope to prevent subsidence of soil beneath Route 440. The top of the slope shall be as close as practicable to Route 440. The slope shall descend at approximately a 1:2 ratio (i.e., the slope will descend one foot vertically for every two feet of lateral extent) until it reaches a depth of three feet below ground surface. Honeywell shall install a geotextile liner over the slope back that is designed to prevent exposure to the chromium contaminated soils and to prevent contamination of the clean soil fill installed pursuant to subparagraph (b). The geotextile liner and the final dimensions of the slope shall be subject to the approval of the New Jersey Department of Transportation and all other necessary governmental authorities.

(ii) In order to maintain sufficient support for existing utility poles, excavation to three feet below ground surface will not be conducted within approximately a four-foot radius of the center of existing utility poles. In the four-foot support radius, Honeywell shall excavate to approximately six inches below ground surface and shall back fill the excavated area with clean soil, as set forth in subparagraph(b), except that no demarcation layer shall be required. Over the four-foot support radius, Honeywell shall

install a geotextile liner that is designed to prevent exposure to the chromium contaminated soils left in place and to prevent contamination of the clean soil fill installed pursuant to subparagraph (b). The liner and final specifications for excavation around existing utility poles shall be subject to the approval of all necessary government authorities and utilities.

(iii) In the segment that is adjacent to the Regnal Realty Property, the excavation shall extend from the western property line of Site 153 to the current Langer Transport fence line with the exception that the Langer Transport fence support posts, sign and building foundations shall be treated either like the Route 440 slope back, consistent with (i) above or like utility poles, consistent with (ii) above, and no excavation is required under the paved entrance between Langer Transport and Route 440.

(iv) No excavation shall be required of the soils under Route 440.

(b) Honeywell shall place an orange demarcation layer (orange snow fence, geotextile liner, or similar material) at the bottom of the excavation and shall backfill the excavation with clean soil having hexavalent chromium concentrations of less than 1 mg/kg. After backfilling, where appropriate, Honeywell shall plant appropriate grass or other vegetation to minimize erosion of the clean fill.

68. **Site 153 South Upper Segment Remedial Action.** Within 90 days of the entry of this Consent Decree, Honeywell shall propose a remedy for the remediation of the soils in the

Site 153 Upper Segment that is subject to review and comment by the Non-Honeywell Parties. In the event that such proposed remedy employs excavation to a depth of three feet below ground surface, in whole or in part, the requirements of paragraph 67 shall apply in the areas to be excavated. Honeywell shall remediate the soils as agreed by the Parties subject to Honeywell's ability to obtain all necessary permits and approvals.

69. **Site 153 South Access Point Warnings.** Honeywell shall provide distinctive warnings in English and Spanish at sewer access points within Site 153 South, including manhole covers, that inform the reader of the presence of chromium at Site 153 South.

70. **Site 153 South Utility Map.** Honeywell shall create a map of the utilities present at Site 153 South, to the extent such information is available through utility suppliers, and provide copies of the map to BMUA and all entities with authority over utilities present at Site 153 South. Honeywell shall revise such map each time chromium contaminated soils are removed pursuant to paragraph 71.

71. **Further Remediation upon Sewer Repair or Replacement.** Further remediation of the chromium contaminated soils in Site 153 South shall be undertaken by Honeywell as follows:

(a) Whenever any section of the sewer in Site 153 South is being replaced, Honeywell shall remove or treat all soils necessary to meet NJDEP's requirements for non-residential use in effect at the time, dispose of such removed material at a facility licensed to accept such materials, replace such materials with materials deemed appropriate by BMUA and having a hexavalent chromium concentration less than the more stringent of (i) the remediation standard for Unrestricted Use adopted by the Court after trial in

the Consolidated Litigation or (ii) a New Jersey soil standard for Unrestricted Use duly adopted after the date of this Consent Decree or, (iii) if no decision has been rendered in the Consolidated Litigation or no standard has been adopted, 1 mg/kg, and document the locations of the removed material pursuant to paragraph 70.

(b) Whenever any normal operating repairs on any section of the sewer in Site 153 South result in the removal of chromium contaminated soils, Honeywell or the appropriate sewer authority shall remove all such soils necessary to effectuate the repair and that exceed NJDEP's requirements for non-residential use in effect at the time, and Honeywell shall arrange for the transportation and disposal of such removed material at a facility licensed to accept such materials, replace such materials with materials deemed appropriate by BMUA and having a hexavalent chromium concentration of less than the more stringent of (i) the remediation standard for Unrestricted Use adopted by the Court after trial in the Consolidated Litigation or (ii) a New Jersey soil standard for Unrestricted Use duly adopted after the date of this Consent Decree or, (iii) if no decision has been rendered in the Consolidated Litigation or no standard has been adopted, 1 mg/kg, and document the locations of the removed material pursuant to paragraph 70.

(c) Whenever any contaminated materials are removed from Site 153 South pursuant to this paragraph, Honeywell shall, to the extent allowed by the sewer authority, also take appropriate steps, such as the placement of a geofabric, to ensure that new fill material does not become contaminated by

any contaminated soil remaining in Site 153 South. Honeywell shall also update the map pursuant to paragraph 70.

72. **Worker Training Plan.** Honeywell shall develop a plan for training all individuals who might be exposed to COPR, chromium-contaminated soils, or chromium-contaminated groundwater in conjunction with any utility or other work performed at Site 153 South ("Worker Training Plan") in conformance with Occupational Safety and Health Administration ("OSHA") rules and guidance. The Worker Training Plan shall detail all appropriate steps such individuals should take to protect themselves from exposure to chromium and shall provide procedures (i) to identify when areas or sections of the pipeline surrounded by COPR or chromium-contaminated soil are scheduled for repair and/or replacement, (ii) to identify and implement appropriate actions to protect workers, and (iii) to coordinate with Honeywell regarding the removal of COPR or chromium-contaminated soils pursuant to paragraph 71. BMUA shall implement such plan pursuant to paragraph 77.

73. **Site 153 South Deed Notice**. Within 90 days of the completion of the remedial measures required by paragraphs 67 and 68, a deed notice, substantially in the form attached as Exhibit E and including the following provisions, shall be recorded by Honeywell pursuant to paragraph 74:

(a) Notice of the presence of chromium contamination at Site 153 South;

(b) Notice that clean fill, caps, and asphalt cover each constitute an engineering control that must be maintained in accordance with the Tech Regs;

(c) A restriction limiting the future uses of Site 153 South to open space, utility corridor, transportation, roadway, crossing, or access to adjacent properties.

Such deed notice shall encumber Site 153 South until such time as an Unrestricted Use No Further Action Determination is issued for Site 153 South. During the period in which Site 153 South is encumbered by the deed notice, Honeywell shall comply with the requirements of the deed notice. At the time the biennial reports required by the deed notice are submitted to NJDEP, Honeywell shall provide copies of the reports to Riverkeeper. The deed notice shall be enforceable against Honeywell in the Consolidated Litigation.

74. **Recording of the Deed Notice.** The deed notice for Site 153 South and this Consent Decree shall be recorded pursuant to N.J.S.A. §§ 46:15-1.I, 46:16-1.1, 46:16-2, and 58:10B-13, in the office of the Hudson County Register and a conspicuous reference to the Consent Decree and Deed Notice shall be included in all instruments concerning title to Site 153 South as long as the property is required to be encumbered by the deed notice pursuant to paragraph 73.

75. **Inspection by Riverkeeper.** Riverkeeper shall have the right to enter Site 153 South annually for purposes of inspecting the Initial Chromium Remedy.

76. **Ownership of and Access to Site 153 South.** Honeywell shall not voluntarily convey fee simple title to Site 153 South to any other person or entity, unless Site 153 South has been remediated such that no hexavalent or total chromium contamination remains at Site 153 South, whether in soils or in groundwater, in excess of the levels and at depths specified by NJDEP for Unrestricted Use in place at the time of the proposed sale or lease. Nothing in this paragraph shall prohibit Honeywell from granting easements or leases on Site 153 South to third

parties without remediating to Unrestricted Use, provided that such easements or leases are for the purposes identified in paragraph 73(c). In the event that a future easement holder or lessee uses Site 153 South for purposes other than those identified in paragraph 73(c), the particular easement or lease shall terminate and Honeywell shall so provide in each future easement and lease instrument. Honeywell shall provide notice to Riverkeeper of each future easement and lease granted, other than the existing easement on Site 153 South.

77. **BMUA Obligations.** BMUA shall develop a permanent plan to implement health and safety measures for its workers at Site 153 South in accordance with OSHA rules related to hazardous materials and shall utilize the plan prepared by Honeywell pursuant to paragraph 72 setting forth the procedures and protections that BMUA shall employ when it conducts activities at Site 153 South. In the event of any planned maintenance or emergency repair of any of its pipelines located under Site 153 South that will involve any disturbance of the remedial measures required by paragraphs 67 and 68, BMUA shall notify Honeywell and Riverkeeper of the planned action(s) and the date(s) for the planned action. Notice to adjacent property owners, in the event of any planned or emergency repair or maintenance of pipelines located under Site 153 South, shall be provided by Honeywell in the manner described in paragraph 81.

D. Long-Term Maintenance and Monitoring

78. **Honeywell's Ongoing Responsibility.** Honeywell shall be responsible for implementing, monitoring, maintaining, repairing, and replacing the Site 79 Ciasulli Property and Site 153 South Chromium Remedies until an Unrestricted Use No Further Action Determination is issued for the respective site pursuant to the terms of this Consent Decree. Honeywell shall satisfy this responsibility through establishment and implementation of a Long-Term Monitoring Plan.

79. **Long-Term Monitoring Plan.** Subject to review and comment by the Non-Honeywell Parties and approval by NJDEP, Honeywell shall develop a Long-Term Monitoring Plan to ensure the ongoing effectiveness of the Site 79 Ciasulli Property and Site 153 South Chromium Remedies to meet the objectives set forth in Sections B and C of this Article. The Long-Term Monitoring Plan shall be consistent with applicable EPA and NJDEP policies and guidance, including EPA's Comprehensive Five Year Review Guidance (2001) (or any subsequent revision) and the Tech Regs. Honeywell shall design the Long-Term Monitoring Plan to satisfy each of the following objectives:

(a) Provide monitoring to ensure that the integrity and effectiveness of the Chromium Remedies are maintained; and

(b) Provide monitoring to ensure that the restrictions of the institutional controls are being satisfied, including the deed notices for the sites.

80. **Monitoring and Remediation under the Long-Term Monitoring Plan.** The Long-Term Monitoring Plan shall include the monitoring and remediation activities set forth in this paragraph and other monitoring and remediation activities, if necessary, to meet the objectives of paragraph 79. Honeywell shall provide the Non-Honeywell Parties and NJDEP with annual reports on activities conducted under the Long-Term Monitoring Plan.

(a) **Monitoring Activities in the Long-Term Monitoring Plan.** Honeywell shall undertake the following monitoring activities, which shall be described in more detail in the Long-Term Monitoring Plan, at intervals no less frequent than set forth below. If the results of Honeywell's monitoring show that the Chromium Remedy for Site 79 Ciasulli Property

or Site 153 South are compromised or threaten to become compromised, Honeywell shall also undertake remediation activities, as set forth below:

(i) Annual inspections of the Site 79 Capped Area and Site 153 South to ensure that all pavement is in good condition and does not have potholes or cracks that penetrate the pavement. The inspection shall take place in April or May of each year. Any potholes or cracks that do not penetrate the pavement shall be repaired as part of regular maintenance that takes place at least annually. Potholes or cracks that penetrate the pavement shall be repaired immediately and, if 10% or greater of a localized area or 25% or greater of the entire paved area suffers from such disturbances, Honeywell shall repave such portion(s) as are necessary to maintain the pavement in good condition.

(ii) Annual inspection monitoring of the vegetative cover at Site 153 South to ensure that any vegetative cover is in conformance with paragraph 67(b);

(iii) Annual inspection of the caps installed in Site 153 South to isolate the chromium contaminated soils left in place for the slope back and around utility poles pursuant to paragraph 67;

(iv) Annual inspection, and repair and/or replacement, as necessary, of all warning signs at Site 153 South;

(v) Annual review, updated as necessary based on changes to field conditions and/or regulatory requirements, of the Worker Training Plan for Site 153 South; and

(vi) To evaluate the gradient from the portions of the Site 79 Ciasulli Property that adjoin Route 440, water level measurements in the groundwater shall occur at the intervals specified for measurement of water levels in shallow groundwater in the Long-Term Monitoring Plan for the Deep Overburden and Bedrock Groundwater Remedy for Study Area 7. In the event that such monitoring indicates that contaminated shallow groundwater is migrating from Route 440 toward the Site 79 Ciasulli Property, Honeywell shall either undertake water quality monitoring to determine whether the groundwater moving towards the Site 79 Ciasulli Property is contaminated, or undertake action to reverse the flow direction. If contaminated groundwater is migrating into the Site 79 Ciasulli Property, Honeywell shall undertake remedial action to prevent such migration.

(b) **Procedures for Proposing Changes to the Long-Term Monitoring Plan.** Any Party may, from time to time, propose changes to the scope of the monitoring activities under the Long-Term Monitoring Plan. If the Parties agree, the Long-Term Monitoring Plan shall be so changed subject to approval by NJDEP or a New Jersey Licensed Site Remediation Professional. If the Parties are unable to reach agreement over alterations

to the Long-Term Monitoring Plan, the Party proposing the change may submit the dispute to the Court for resolution.

(c) **Contingency Plan.** As part of the Long-Term Monitoring Plan, Honeywell shall develop a contingency plan to ensure the integrity of the Chromium Remedies in the event of (i) any planned penetration of the Site 79 Capped Area or the clean fill or other remedial measures at Site 153 South or (ii) any unplanned event or accident that penetrates the Site 79 Capped Area or otherwise compromises the integrity of the Initial Chromium Remedies at the Site 79 Ciasulli Property or Site 153 South. The contingency plan shall include, at a minimum, an annually updated plan to notify the relevant persons, including NJDEP and the Non-Honeywell Parties, of (i) the event penetrating the cap, compromising the cap, or compromising the integrity of the Initial Chromium Remedy; (ii) the general steps to be taken to identify the extent of the problem; and (iii) the standards for remedying the problem.

(d) **Recordkeeping.** Honeywell shall maintain written logs or other records of those monitoring and remediation activities undertaken pursuant to the Long-Term Monitoring Plan. Such logs shall be provided to the Parties on an annual basis.

81. **Notice to Stakeholders.** All owners, residents, or tenants of the Site 79 Ciasulli Property and Site 153 South and properties adjacent thereto on the eastern side of Route 440, and any entity that holds a utility easement on the Site 79 Ciasulli Property or Site 153 South are deemed to be stakeholders for purposes of this paragraph. Honeywell shall ensure that all

stakeholders are provided notice of conditions in and activities affecting the Site 79 Ciasulli Property and Site 153 South in the following manner:

(a) Notice, updated annually, to New Jersey One Call and any other underground alert hotlines existing in New Jersey now or in the future, identifying the location and type of contamination at or near pipelines or other utilities within the Site 79 Ciasulli Property and Site 153 South;

(b) In the event of any planned or emergency excavation within the Site 79 Capped Area or Site 153 South, notice of any actions undertaken or planned and the safety measures implemented to protect individuals near the Site 79 Ciasulli Property and/or Site 153 South from exposure; and

(c) An annually updated summary notice of the Chromium Remedy that is made available on any website developed to inform the public of contamination at Study Area 6 North, Study Area 6 South, and any future website related, in whole or in part, to Study Area 5. Such notice shall include a description of the remedial actions undertaken and the contamination remaining at the Site 79 Ciasulli Property and Site 153 South. Once the long-term monitoring requirements set forth in paragraph 80 become effective, such annual update shall occur upon completion of the annual long-term monitoring required by paragraph 80(a).

Each year beginning one year after the issuance of the first notice pursuant to paragraph 81(a), Honeywell shall provide a letter to Riverkeeper documenting its compliance with this paragraph.

82. **Stakeholder Enforcement.** Any stakeholder shall have the right to enforce the remedial obligations of this Consent Decree in the Court, including post-implementation monitoring and maintenance obligations, and the terms of any deed notice or use restriction.

C. Oversight and Enforcement

83. **Federal Court Jurisdiction.** The Court shall retain jurisdiction over the matters addressed in this Consent Decree for purposes of enabling the Parties to apply to the Court for any further order as may be necessary to construe, carry out, or enforce the terms of this Consent Decree and the terms of the deed notices required by paragraphs 59 and 73.

84. **Oversight of the Chromium Remedies.**

(a) **NJDEP Authority.** Nothing in this Consent Decree shall limit NJDEP's full statutory and regulatory authority with respect to Site 79 or Site 153 South, including (i) permitting authority; (ii) authority to review and approve all submissions required by the Tech Regs for the Chromium Remedies; or (iii) authority to issue or allow no further action letters.

(b) **Special Master.** The Parties dispute the need for a Special Master to oversee implementation of the injunctive relief set forth in this Consent Decree. Riverkeeper therefore reserves the right to seek appointment of a Special Master to oversee the injunctive provisions of this Consent Decree, including referral of supervision of this Consent Decree to the Special Master who has been appointed to oversee implementation of the Study Area 6 North and Study Area 6 South Consent Decrees, and Honeywell and Ciasulli reserve the right to oppose any such appointment or to seek limitations on the powers or authority of any Special Master

appointed. Riverkeeper agrees to defer seeking the appointment of a Special Master until the conclusion of trial in the Consolidated Litigation, except that such right shall not be deferred in the event that a consent decree is entered that resolves Riverkeeper's remaining claims in the Consolidated Litigation. In the event that Riverkeeper's request for appointment of a Special Master to oversee the implementation of this Consent Decree is denied, Honeywell shall undertake the obligations assigned to it in this Consent Decree without further order of the Court and Riverkeeper shall retain the right to enforce this Consent Decree through any means permitted under federal law, including a successive or renewed motion for appointment of a Special Master.

(c) **Submission of Documents by Honeywell.** The following documents shall be subject to review and comment by the Non-Honeywell Parties. Honeywell shall submit the following documents to Riverkeeper, any Non-Honeywell Defendant with an Interest, and NJDEP. Document submittal shall be satisfied by making available electronic files of such documents on an accessible file transfer or other web site provided that notice is provided of the availability of such document and the time period for review runs from the provision of such notice. All documents shall be submitted to Riverkeeper and any Non-Honeywell Defendant with an Interest for review and comment at least 30 days before the document is submitted to NJDEP, to the extent such documents are required to be submitted to NJDEP. Honeywell may submit a document to NJDEP at

any time after the 30-day review and comment period has elapsed, even if Honeywell, Riverkeeper, and any Non-Honeywell Defendant with an Interest have not reached agreement on the contents of the document.

(i) The Master Schedule required by paragraph 53;

(ii) An amended Remedial Action Work Plan for the Site 79 Ciasulli Property, as required by paragraph 53(a);

(iii) A work plan/design document for Site 153 South, as required by paragraph 53(b);

(iv) A map of the utilities at Site 153 South, to the extent such information is available through utility suppliers, that indicates the areas where COPR and/or chromium contaminated soils are present;

(v) Design drawings and specifications at the 100% level (after selection of the contractor) (hereafter "100% Design") for Initial Chromium Remedies;

(vi) Site-wide master health and safety plan for implementation of the Initial Chromium Remedies;

(vii) Long-Term Monitoring Plan for the Initial Chromium Remedies;

(viii) Final Remedial Action Reports or final construction reports (including as-built drawings and such other reports as may be prepared of the remedy as implemented) for the Initial Chromium Remedies;

(ix) All post-implementation monitoring reports as required by the Long-Term Monitoring Plan; and

(x) All documents required by the Tech Regs for the Final Chromium Remedies.

(d) **Review of Documents.**

(i) **Dispute Resolution for Honeywell Submittals.** With regard to each document identified in paragraph 83(c), Riverkeeper, Honeywell, and each Non-Honeywell Defendant with an Interest shall engage in a good-faith efforts to reach an agreement on the contents of the document and the activities to be undertaken pursuant thereto. Such effort may include the submission of comments to Honeywell or NJDEP, informal negotiations, or, with the consent of all concerned Parties, mediation. In the event that Riverkeeper, Honeywell, and each Non-Honeywell Defendant with an Interest reach agreement on the contents of a document, Honeywell shall finalize the document as agreed and shall proceed with the activity as set forth therein. In the event that Riverkeeper, Honeywell, and each Non-Honeywell Defendant with an Interest are unable to reach agreement, any one of them may make a motion to have the Court resolve the dispute. No motion may be made to the Court pursuant to this paragraph until NJDEP has had at least 90 days to review the document or such longer time as may be agreed upon by the concerned Parties.

(ii) **Flexibility in 100% Design Documents.** The Parties recognize that work conducted to implement the Chromium Remedies may be conducted by Honeywell contractors and that Honeywell may establish performance-based criteria or specifications for its contractors. As a result, the Parties recognize that the 100% Design documents for the Chromium Remedies may include performance-based standards, criteria, and specifications. These documents shall be sufficiently prescriptive to enable the Non-Honeywell Parties to evaluate their conformance with the Remedial Action Work Plan and this Consent Decree.

(iii) **Changes to the Schedule.** The Parties recognize that changes to individual line items in the Master Schedule may occur. To the extent that (i) the Parties agree that such changes do not have a material impact on satisfaction of the Schedule milestones established for items set forth in paragraph 53, and (ii) such changes do not require modifications to any necessary permits or authorizations for the affected Chromium Remedy, such changes may be made upon agreement of the Parties without further order of the Court.

(e) **Appointment of Special Master.** In the event that Riverkeeper seeks appointment of a Special Master pursuant to paragraph 84(b) and the Court appoints a Special Master, the provisions of paragraph 84(d) shall be of no further force or effect and the provisions of the Order appointing

the Special Master shall govern the procedures for the approval of documents Honeywell is required to submit pursuant to this Consent Decree.

D. Financial Assurances

85. **No Financial Assurances Required.** Honeywell shall not be required to provide any financial assurances pursuant to this Consent Decree to secure performance of its obligations under this Consent Decree.

86. **Right to Seek Financial Assurances.** Riverkeeper reserves the right to seek an order requiring Honeywell to provide financial assurances to secure performance of its obligations under this Consent Decree, including the long-term protectiveness of the remedies set forth herein, and Honeywell reserves all rights to oppose any such order. Riverkeeper agrees to defer seeking any order requiring Honeywell to provide financial assurances until the conclusion of trial in this Consolidated Litigation, except that such right shall not be deferred in the event that a consent decree is entered that resolves Riverkeeper's remaining claims in the Consolidated Litigation.

87. **No Limitation on Financial Assurances Required by Regulatory Authorities.** Nothing in this Consent Decree shall be construed as limiting the right of NJDEP or any other administrative agency to require Honeywell to provide financial assurances related to any of the remedial actions Honeywell is undertaking pursuant to this Consent Decree.

ARTICLE IV: TERMINATION

88. **Termination of This Consent Decree upon Full Remediation.** Honeywell's obligations under this Consent Decree with respect to the Site 79 Ciasulli Property shall terminate completely and this Consent Decree shall be of no further force and effect with regard

thereto upon Honeywell's completion of further remedial activities pursuant to paragraph 61 and its receipt of an Unrestricted Use No Further Action Determination for hexavalent chromium for the Site 79 Ciasulli Property. Honeywell's obligations under this Consent Decree with respect to Site 153 South shall terminate completely and this Consent Decree shall be of no further force and effect with regard thereto upon Honeywell's completion of the further remedial activities pursuant to paragraph 71 and its receipt of an Unrestricted Use No Further Action Determination for hexavalent chromium for Site 153 South.

89. **Termination for Other Reasons.** Except as set forth in paragraph 88, this Consent Decree shall terminate, in whole or in part, only upon the withdrawal of any Party as provided for in this paragraph. Any Party may elect to withdraw from this Consent Decree, with respect to one or both Sites, due to the occurrence of one or more of the following events, provided that such Party provides written notice of withdrawal to the other Parties pursuant to paragraph 90:

(a) Any Party may elect to withdraw from the Consent Decree in its entirety if the Court fails to enter this Consent Decree or this Consent Decree is determined to be invalid by the Court or any other court of competent jurisdiction, in which case the entire Consent Decree shall terminate;

(b) Any Party may elect to withdraw from those portions of the Decree related to the Site 79 Ciasulli Property and such portions of the Consent Decree shall terminate if NJDEP takes one of the following actions with respect to the Amended Remedial Action Work Plan for the Initial Chromium Remedy at the Site 79 Ciasulli Property:

(i) Rejects or fails to approve such plan within 180 days of submission of the plan; or

(ii) Approves such plan, but conditions such approval on changes in the plan that result in a substantial reduction of the protection of human health and/or the environment.

(c) In the event NJDEP approves the Amended Remedial Action Work Plan for the Initial Chromium Remedy for the Site 79 Ciasulli Property, but conditions such approval on changes in the plan that result in more than a 50% increase in the estimated costs of the Initial Chromium Remedy, as set forth in Article III, Honeywell only may withdraw from those portions of this Consent Decree related to the Site 79 Ciasulli Property and such portions of the Consent Decree shall terminate.

(d) Any Party may elect to withdraw from those portions of the Consent Decree related to Site 153 South, and such portions of the Consent Decree shall terminate if NJDEP takes one of the following actions with respect to the Remedial Action Work Plan or other work plan for Initial Chromium Remedy for Site 153 South:

(i) Rejects or fails to approve such plan or other work plan within 180 days of submission of the plan; or

(ii) Approves such plan, but conditions such approval on changes in the plan that result in a substantial reduction of the protection of human health and/or the environment.

(e) In the event NJDEP approves the Remedial Action Work Plan or other work plan for the Initial Chromium Remedy for Site 153 South, but conditions such approval on changes in the plan that result in more than a 50% increase in the estimated costs of the Initial Chromium Remedy, as set forth in Article III, Honeywell only may withdraw from those portions of this Consent Decree related to Site 153 South and such portions of the Consent Decree shall terminate.

90. **Procedures for Withdrawal and Termination.** Any Party electing to withdraw pursuant to paragraph 89 and thereby terminate all or a portion of this Consent Decree shall provide written notice of such withdrawal and termination to all other Parties within 30 days of the occurrence giving rise to the decision to withdraw. If any Party objects to termination of all or a portion of the Consent Decree or believes that the conditions set forth in paragraph 89 have not been met, such objecting Party may move the Court for an expedited hearing on the issue of whether the conditions for termination have been met and the Party seeking termination shall bear the burden of proof that the conditions for termination have been met.

91. **Good-Faith Obligation to Avoid Termination.** The Parties agree that they will each endeavor to fulfill the terms of this Consent Decree, that they will work diligently and in good faith to meet their obligations hereunder, and that they will promptly and timely take all reasonable steps to give effect to this Consent Decree and to avoid termination under paragraph 89.

92. **Effect of Termination.** If this Consent Decree is terminated in whole or in part pursuant to paragraph 89, the terminated terms of the Consent Decree shall no longer be binding on the Parties and shall be of no further effect. In the event that this Consent Decree is

terminated in whole or in part by one or more Parties pursuant to paragraph 89, each Party to this Consent Decree reserves all of its rights, claims, and defenses (both legal and factual) against the other Parties with respect to the matters at issue in the Consolidated Litigation previously addressed by the terminated terms and each Party remains free to pursue such rights, claims, and defenses.

ARTICLE V: NOTICE

93. **Notice.** Any and all notices given in connection with this Consent Decree shall be deemed adequately given only if in writing and addressed to the Party for whom such notices are intended at the addresses set forth in this paragraph. All notices shall be sent by FedEx or other nationally recognized overnight messenger service or by first-class registered or certified mail, postage prepaid, return receipt requested. A written notice shall be deemed to have been given to the recipient party on the earliest of (a) the date it shall be delivered to the address set forth in this paragraph; (b) the date delivery shall have been refused at the address set forth in this paragraph; or (c) with respect to notices sent by mail, the date as of which the postal service shall have indicated such notice to be undeliverable at the address set forth in this paragraph. Any notices referred to in this Consent Decree or which any Party desires to give to another shall be addressed as follows:

If to Honeywell:

Thomas Byrne, Esq.
Chief Environmental Counsel
Honeywell International Inc.
101 Columbia Road
Morristown, NJ 07962
(973) 455-2775

With copies to:

Michael D. Daneker, Esq.
Arnold & Porter LLP
555 Twelfth Street, NW
Washington, DC 20004
(202) 942-5177

and

John Morris
Remediation Portfolio Director
Honeywell International Inc.
101 Columbia Road
Morristown, NJ 07962
(973) 455-4003

If to Riverkeeper:

Bruce J. Terris, Esq.
Carolyn Smith Pravlik, Esq.
Kathleen L. Millian, Esq.
Terris, Pravlik & Millian LLP
1121 Twelfth Street, NW
Washington, DC 20005
(202) 682-2100

If to Bayonne Municipal Utilities Authority:

Donna M. Russo, Esq.
General Counsel
Law Department, BMUA
630 Avenue C
Bayonne, NJ 07002
(201) 858-6095

If to Bob Ciasulli:

Robert G. Ciasulli
Bob Ciasulli Auto Group
1485 Route 46 East
Little Falls, NJ 07424
973-785-8413

With a copy to:

Robert J. Woehling, Esq.
Woehling & Freeman LLP
50 Elmer Street
Westfield, NJ 07090
908-232-3700

94. **Changes to Notice.** Any party may change its designated recipients or addresses for notice in paragraph 93 by providing written notice of such change to all other Parties.

ARTICLE VI: RIVERKEEPER'S ATTORNEYS' FEES

95. **Payment of Past Fees and Expenses.** Within 30 days of the entry of this Consent Decree, Honeywell shall pay Terris, Pravlik & Millian, LLP the sum of $489,957.36 which represents the following:

(a) A compromise of the attorneys' fees incurred by Riverkeeper in the litigation of the Sites 79 and 153 South portion of the Consolidated Litigation through June 30, 2009; and

(b) $87,568.41 in out-of-pocket expenses representing a portion of the expenses incurred by Riverkeeper in the Consolidated Litigation from the inception of the litigation after deducting the expenses paid pursuant to the Sediment Consent Order, the Deep Groundwater Consent Order, the Study Area 6 North Consent Decree, and the Study Area 6 South Consent Decree.

(c) Payment of the sum of $489,957.36 shall be in full satisfaction of all obligations, duties, and responsibilities of Honeywell with respect to the $511,135.73 in fees and expenses that Riverkeeper claimed with regard to the above described fees and expenses.

96. **Future Fees and Expenses.** Honeywell shall reimburse Riverkeeper's attorneys for reasonable fees and expenses incurred in negotiating this Consent Decree after June 30, 2009, and in the monitoring and enforcement of this Consent Decree. In the event that any dispute arises between the Parties under this Consent Decree that must be resolved by the Court, Riverkeeper shall be entitled to recover its attorneys' fees and expenses for litigation of the dispute to the extent allowed by federal law. Riverkeeper and Honeywell shall use the same informal procedure for attempting to settle fees issues as has been used for post-judgment monitoring fees in *ICO v. Honeywell.* In the event that Riverkeeper and Honeywell are unable to reach a settlement on fees, Riverkeeper shall apply to the Court for an award of attorneys' fees and expenses. If Honeywell objects to only a portion of the Riverkeeper's statement of attorneys' fees and expenses, Honeywell shall pay the undisputed portion within 60 days of Riverkeeper's submittal of the statement to Honeywell. The Court shall resolve any objections to Riverkeeper's statement of attorneys' fees and expenses and shall enter an appropriate Order. In the event of Honeywell's default, Riverkeeper may seek attorneys' fees from any funds established pursuant to any financial assurances required by further order of the Court.

ARTICLE VII: MISCELLANEOUS PROVISIONS

97. **Force Majeure.** Force majeure, for the purposes of this Consent Decree, is defined as an event arising from causes beyond the control of any Party or Parties (or their agents, contractors, subcontractors, representatives, or assigns) which could not have been overcome by reasonable diligence and which delays or prevents the performance of any obligation under this Consent Decree. Examples of events which may constitute force majeure include the refusal of any federal or state governmental authority to grant a permit or authorization necessary for the completion of actions required by this Consent Decree, floods,

hurricanes, tornadoes, and other extraordinary weather events, earthquakes and other natural disasters, terrorist attacks, war, and other national emergencies. Examples of events that are not force majeure events include normal inclement weather, increased costs or expense, the failure to timely and fully apply for a permit or authorization necessary for the completion of actions required by this Consent Decree, or financial difficulty of any Party. The Party claiming force majeure shall bear the burden of showing an event was a force majeure event.

98. **Successors and Assigns.** This Consent Decree shall be binding upon and shall inure to the benefit of the successors, assigns, heirs, corporate parents, subsidiaries, and affiliates of each Party. No assignment or delegation of the obligations hereunder shall release the assigning Party from its obligations under this Consent Decree.

99. **Successors to Hackensack Riverkeeper, Inc.** In the event that Hackensack Riverkeeper, Inc. disbands, is dissolved, or otherwise ceases operations, it shall assign its rights under this Consent Decree to another qualified nonprofit organization. A nonprofit organization shall be qualified for assignment under this Consent Decree if it is a charitable organization under Section 501(c)(3) of the Internal Revenue Code or its substantial equivalent and has an established record of working to enhance or preserve the ecology, natural habitat, or environment. Any such assignment shall be subject to approval by the Court and Honeywell and Ciasulli shall have the right to object to any proposed assignment. Any successor organization shall have the duty to assign its rights under this Consent Decree to another qualified nonprofit organization in the event that the successor disbands, is dissolved, or otherwise ceases operations. In the event that a successor is not appointed at any given time, the Court shall request that New Jersey Attorney General or equivalent officer appoint a successor subject to approval by the Court and objection by Honeywell and Ciasulli.

100. **Reservation of Rights and Claims.** Except as set forth expressly herein, this Consent Decree in no way affects any of the Parties' claims or defenses against third parties who have not signed the Consent Decree.

101. **Governing Law.** This Consent Decree shall be interpreted and enforced under the laws of the United States and the State of New Jersey by the United States District Court for the District of New Jersey.

102. **Construction.** Questions regarding the interpretation of this Consent Decree shall not be resolved against any Party on the ground that this Consent Decree has been drafted by that Party. This Consent Decree is the result of review, negotiation, and compromise by each Party.

103. **Authority to Enter into Agreement.** The undersigned representative for each Party represents, certifies, and warrants that he or she is duly authorized by the Party whom he or she represents to enter into the terms of this Consent Decree and bind such Party legally to this Consent Decree.

104. **Modifications.** This Consent Decree may be modified by mutual agreement of the Parties but such agreement must be in writing, duly and properly signed by all Parties, and shall be submitted to the Court for approval.

105. **Signatures.** This Consent Decree may be signed simultaneously or in counterparts by the respective signatories, which shall be as fully valid and binding as if a single document was signed by all of the signatories.

[SIGNATURES FOLLOW]

Consented to and approved for entry:

Michael D. Daneker
Arnold & Porter LLP
555 12th Street, NW
Washington, DC 20004
(202) 942-5000

David Sheehan
Baker Hostetler
45 Rockefeller Plaza
11th Floor
New York, NY 10111
(212) 589-4200

Counsel for Honeywell International Inc

Bruce J. Terris
Carolyn Smith Pravlik
Kathleen L. Millian
Terris, Pravlik & Millian, LLP
1121 12th Street, NW
Washington, DC 20005-4632
(202) 682-2100

Edward Lloyd
Columbia Law School
435 West 116th Street, Room 831
New York, NY 10027
(212) 854-4376

Counsel for the Hackensack Riverkeeper, William Sheehan, Reverend Winston Clarke, and Lawrence Baker

Donna Russo
Law Department
630 Avenue C
Bayonne, NJ 07002
(201)858-6095

Counsel for Bayonne Municipal Utilities Authority

Robert Woehling
Resa Drasin
Woehling & Freeman, LLP
50 Elmer Street
Westfield, NJ 07090
(908) 232-3700

Counsel for Bob Ciasulli

APPROVED AND ENTERED as an Order of this Court this ___ day of _____, 2009.

Hon. Dennis M. Cavanaugh
United States District Judge

Consented to and approved for entry:

Michael D. Daneker
Arnold & Porter LLP
555 12th Street, NW
Washington, DC 20004
(202) 942-5000

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Robert Woehling
Resa Drasin
Woehling & Freeman, LLP
50 Elmer Street
Westfield, NJ 07090
(908) 232-3700

Counsel for Bob Ciasulli

APPROVED AND ENTERED as an Order of this Court this ___ day of _____, 2009.

Hon. Dennis M. Cavanaugh
United States District Judge

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APPROVED AND ENTERED as an Order of this Court this 21 day of JAN, ~~2009~~. 2010

Hon. Dennis M. Cavanaugh
United States District Judge

EXHIBIT D-2

Amended 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

UNITED STATES DISTRICT COURT
DISTRICT OF NEW JERSEY

JERSEY CITY MUNICIPAL UTILITIES AUTHORITY, Plaintiff, v. HONEYWELL INTERNATIONAL INC., Defendant.	Consolidated under Docket No. 05-5955 (DMC-PS)
JERSEY CITY INCINERATOR AUTHORITY Plaintiff, v. HONEYWELL INTERNATIONAL INC., Defendant.	Civil Action No. 05-5993 Consolidated under Docket No. 05-5955 (DMC-PS)
HACKENSACK RIVERKEEPER, INC., et al. Plaintiffs, v. HONEYWELL INTERNATIONAL INC., et al. Defendants.	Civil Action No. 06-22 Consolidated under Docket No. 05-5955 (DMC-PS)

CONSENT DECREE REGARDING REMEDIATION OF THE NEW JERSEY CITY UNIVERSITY REDEVELOPMENT AREA

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RECITALS

Whereas, on June 30, 2003, the district court for the District of New Jersey (hereafter "the Court") issued a Final Judgment in *Interfaith Community Organization v. Honeywell International Inc.*, Civ. No. 95-2097 (DMC) ("*ICO v. Honeywell*"), ordering the remediation of an area designated by the New Jersey Department of Environmental Protection ("NJDEP") as Study Area 7 of the Chromium Chemical Production Waste Sites;

Whereas, on or about December 23, 2005, the Jersey City Municipal Utilities Authority ("JCMUA") filed litigation styled *Jersey City Municipal Utilities Authority v. Honeywell International Inc.*, D.N.J., Civ. No. 05-5955 (DMC), bringing claims against Honeywell International Inc. ("Honeywell") under, among other grounds, Section 7002 of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. § 6972, seeking remediation of chromium contamination on property then owned by JCMUA and other relief;

Whereas, on or about December 28, 2005, the Jersey City Incinerator Authority ("JCIA") filed litigation styled *Jersey City Incinerator Authority v. Honeywell International Inc.*, D.N.J., Civ. No. 05-5993 (DMC), bringing claims against Honeywell under, among other grounds, Section 7002 of RCRA seeking remediation of chromium contamination on property then owned by JCIA and other relief;

Whereas, on or about January 4, 2006, Hackensack Riverkeeper, Inc., William Sheehan, Winston Clarke, and Lawrence Baker (collectively, "Riverkeeper") filed litigation styled *Hackensack Riverkeeper, Inc. v. Honeywell International Inc.*, D.N.J., Civ. No. 06-0022 (DMC), bringing a claim against Honeywell under Section 7002 of RCRA seeking remediation of chromium contamination in soils, groundwater, surface waters, and sediments associated with various properties collectively designated by NJDEP as Study Area 5, Study Area 6 North, which includes the properties formerly owned by the City of Jersey City, JCMUA, and JCIA

(collectively "the Jersey City Entities"), and Study Area 6 South, as well as a parcel adjacent to Study Area 5 owned by Regnal Realty, Inc.;

Whereas, Riverkeeper also named as defendants in *Riverkeeper v. Honeywell* owners of the properties comprising Study Areas 5, 6 North, and 6 South, including New Jersey City University ("NJCU"), Carlos Hernandez, in his official capacity as President of NJCU, Bayonne Municipal Utilities Authority ("BMUA"), Jersey City Fields LLC, Bob Ciasulli, Elisabeth and Rafael Rosario, Michael Vo, and Regnal Realty, as necessary party defendants pursuant to Rule 19 of the Federal Rules of Civil Procedure;

Whereas, *JCMUA v. Honeywell, JCIA v. Honeywell,* and *Riverkeeper v. Honeywell* were consolidated by the Court under the caption *Jersey City Municipal Utilities Authority v. Honeywell International Inc.*, D.N.J., Civ. No. 05-5955 (DMC) ("Consolidated Litigation");

Whereas, in the Consolidated Litigation, Riverkeeper has alleged that Honeywell bears responsibility for the presence and remediation of chromite ore processing residue ("COPR") and chromium contaminated soils and groundwater on the Study Area 5 properties;

Whereas, Study Area 5 is comprised of five sites designated by NJDEP as Sites 079, 090, 117, 153, and 184;

Whereas, Honeywell owns the property that comprises Site 153 and such property is subject to an easement held by BMUA for purposes of its operation and maintenance of the pipeline that runs the length of Site 153 and carries sewage from the City of Bayonne to the regional wastewater treatment plant operated by the Passaic Valley Sewerage Commission;

Whereas, certain property owned by NJCU and certain property owned by Honeywell, subject to an easement held by BMUA, comprise a portion of Study Area 5, known collectively as the NJCU Redevelopment Area and also referred to herein as the Site;

Whereas, NJCU and Honeywell's affiliates, Kellogg Street 60 Property, LLC, Kellogg Street 80 Property, LLC, and Kellogg Street/440 Property, LLC, asserted cross-claims against each other in *Riverkeeper v. Honeywell*;

Whereas, on July 7, 2006, the Court entered a Stipulation and Order of Dismissal without Prejudice or Costs dismissing all cross-claims asserted in *Riverkeeper v. Honeywell* between NJCU and Kellogg Street 60 Property, LLC, Kellogg Street 80 Property, LLC, and Kellogg Street/440 Property, LLC;

Whereas, BMUA and Honeywell asserted cross-claims against each other in the Consolidated Litigation, which have been settled and dismissed pursuant to an Order of the Court dated January 7, 2008;

Whereas, on April 21, 2008, the Court entered the Consent Decree Regarding Remediation and Redevelopment of Study Area 6 North ("Study Area 6 North Consent Decree"), resolving issues between Honeywell, Riverkeeper, and the Jersey City Entities related to chromium contamination at Study Area 6 North;

Whereas, on May 28, 2008, the Court entered the Consent Order on Sediment Remediation and Financial Assurances ("Sediment Consent Order"), resolving issues related to the remediation of chromium contaminated sediments in the Hackensack River in the vicinity of Study Areas 5, 6, and 7;

Whereas, on September 3, 2008, the Court entered the Deep Overburden and Bedrock Groundwater Remedies Consent Order ("Deep Groundwater Consent Order"), resolving all issues related to the remediation of deep overburden and bedrock groundwater in both *ICO v. Honeywell* and the Consolidated Litigation, with the exception of any issues that might be related to the Regnal Realty Property;

Whereas, on December 29, 2008, the Court entered the Consent Decree and Order Regarding Remediation and Redevelopment of Study Area 6 South ("Study Area 6 South Consent Decree"), resolving issues between Honeywell and Riverkeeper related to chromium contamination at Study Area 6 South;

Whereas, on October 14, 2009, Honeywell, the Jersey City Entities, Riverkeeper and the Special Master, appointed to oversee matters related to Study Areas 6 and 7, requested that the Court enter the Consent Order Regarding Financial Assurances (also referred to as the Global Financial Assurances Order), which addresses financial assurance issues that have arisen under the financial assurance provisions in various orders and consent decrees, including the Study Area 6 North Consent Decree and the Study Area 6 South Consent Decree;

Whereas, the Parties to this Consent Decree each believe that it is in their mutual interest to move forward productively to resolve their differences so that they can implement environmental remediation at the NJCU Redevelopment Area that ensures the continued protection of human health and the environment and so that Study Area 5 can be redeveloped in keeping with Jersey City's vision for a revitalized West Side;

Whereas, the settlement which is the subject matter of this Consent Decree contemplates the environmental remediation of the NJCU Redevelopment Area so that it may be redeveloped to create a major mixed use project in an important section of Jersey City;

Whereas, each of the actions to implement this Consent Decree have been fully considered by the Parties as a means to accomplish the aforesaid purposes of this settlement and each of the Parties consents to be bound by the provisions set forth herein subject to the limitations set forth in paragraph 89 for any future owner of the NJCU Commercial AOC;

NOW, THEREFORE, IT IS HEREBY ORDERED AND DECREED AS FOLLOWS:

ARTICLE I: DEFINITIONS

For purposes of this Consent Decree, the following terms shall have the meanings set forth in this Article:

1. **BMUA** shall mean the Bayonne Municipal Utilities Authority or its successors in interest with regard to the easement and sewer pipeline that runs the length of Sites 153 North and South.

2. **Below 4 Feet Soils** shall mean those soils in the Residential AOC at a depth greater than four feet below final redevelopment grade following remediation pursuant to paragraph 72.

3. **Chromium Remedy** or **Chromium Remediation** shall mean those remedial actions set forth in Article III of this Consent Decree.

4. **Clean Fill** shall mean those fill materials satisfying the requirements set forth in paragraph 69.

5. **Commercial AOC** shall mean the area which is shaded in light green on Figure 6A of the approved RAWP, attached hereto as Exhibit A. The Commercial AOC is comprised of Site 153 North, which is owned by Honeywell, and the NJCU Commercial AOC, which is owned by NJCU.

6. **Consolidated Litigation** shall mean *Jersey City Municipal Utility Authority v. Honeywell International Inc.*, D.N.J., Civ. No. 05-5955 (DMC), *Jersey City Incinerator Authority v. Honeywell International Inc.*, D.N.J., Civ. No. 05-5993 (DMC), and *Hackensack Riverkeeper, Inc. v. Honeywell International Inc.*, D.N.J., Civ. No. 06-022 (DMC).

7. **Construction Phase** shall mean the Chromium Remedy activities set forth in paragraphs 72, 74, 75, 78, 80, 81, and 86.

8. **Contingent Residential Conversion Financial Assurances** shall mean the financial assurances required under paragraph 139 for performance of Honeywell's remedial obligations set forth in paragraph 77.

9. The **Court** shall mean the United States District Court of the District of New Jersey, which has jurisdiction over the Consolidated Litigation.

10. **Deep Groundwater Consent Order** shall mean the Deep Overburden and Bedrock Groundwater Remedies Consent Order entered by the Court on September 3, 2008, in both *ICO v. Honeywell* and the Consolidated Litigation.

11. **Greater Than 20 Soils** shall mean those soils in which the hexavalent chromium concentration is greater than 20 mg/kg.

12. **Greater Than 5 Soils** shall mean those soils in which the hexavalent chromium concentration is greater than 5 mg/kg.

13. **Historic Fill** shall have the definition provided in the Technical Requirements for Site Remediation.

14. **Historic Fill Remedy** or **Historic Fill Remediation** shall mean the remedy set forth in the NJCU Remedial Investigation/Remedial Action Work Plan for contamination other than chromium or COPR, dated February 2006, except that the Historic Fill Remedy shall not be limited to the remedy set forth in the NJCU Remedial Investigation/Remedial Action Work Plan for contamination other than chromium or COPR if NJDEP requires a more stringent remedy.

15. **Honeywell** shall mean Honeywell International Inc. and its affiliates, including 425/445 Route 440 Property, LLC, Kellogg Street 80 Property LLC, Kellogg Street 60 Property LLC, and Kellogg Street/440 Property LLC.

16. ***ICO v. Honeywell*** shall mean *Interfaith Community Organization v. Honeywell International Inc.*, D.N.J., Civ. No. 95-2097 (DMC).

17. **Including** shall mean including, but not limited to.

18. **NJCU** shall mean the New Jersey City University.

19. **NJCU Commercial AOC** shall mean the part of the Commercial AOC which does not include Site 153 North and which is owned by NJCU.

20. **NJCU Development Plan** shall mean the plan for development of the NJCU West Campus dated October 23, 2007, which is attached hereto as Exhibit B.

21. **NJCU Property** shall mean the area comprised of the NJCU Commercial AOC and the Residential AOC.

22. **NJCU Redevelopment Area** shall mean the area comprised of the Commercial AOC and the Residential AOC.

23. **NJCU Redevelopment Plan** shall mean the New Jersey City University West Campus Redevelopment Plan approved on February 9, 2005, and any approved amendments thereto.

24. **NJDEP** shall mean the New Jersey Department of Environmental Protection.

25. **NJDEP Chromium Policy** shall mean the chromium remediation policy set forth in the memorandum from Lisa Jackson to Irene Kropp on February 8, 2007, and attached as Exhibit C. The NJDEP Chromium Policy is also known as the NJDEP Chromium Directive.

26. **Non-Honeywell Parties** shall mean Riverkeeper, BMUA, and NJCU and any subsequent owner of any part of the NJCU Redevelopment Area.

27. **Non-Honeywell Party with an Interest** shall mean Riverkeeper and any Non-Honeywell Party who has an ownership or other real property interest in the property that is the subject of any particular document, action or decision under this Consent Decree.

28. **Outstanding Fees and Expenses** shall mean Riverkeeper's litigation costs, including attorneys' fees and expert witness fees, through the entry of this Consent Decree, less

the $3,446,187.07 paid by Honeywell for fees and expenses in the Consolidated Litigation under the Prior Settlements. However, the term Outstanding Fees and Expenses excludes the fees and expenses covered by the following provisions of the Prior Settlements:

(a) Paragraph 110 of the Study Area 6 North Consent Decree;

(b) Paragraph 120 of the Study Area 6 South Consent Decree;

(c) Paragraph 96 of the Site 79 Consent Decree;

(d) Paragraph 88 and 89 of the Sediments Consent Order; and

(e) Paragraph 30 of the Deep Groundwater Consent Order.

29. **Party or Parties** shall mean any one or all of the signatories to this Consent Decree.

30. **Prior Settlements** shall mean collectively the Study Area 6 North Consent Decree, the Study Area 6 South Consent Decree, the Site 79 Consent Decree, the Sediments Consent Order, and the Deep Groundwater Consent Order.

31. **RCRA** shall mean the Resource Conservation and Recovery Act, 42 U.S.C. § 6901, *et seq.*, as amended.

32. **Regnal Realty Property** shall mean the property owned by Regnal Realty, Inc., consisting of Block 1288.2, Lot 1, located at 420 Route 440, Jersey City, New Jersey, upon which Langer Transport operates a trucking operation.

33. **Remedial Action Work Plan** or **RAWP** shall mean the July 2007 Final Supplemental Remedial Investigation Report/Remedial Action Selection Report/Remedial Action Work Plan for Study Area 5, NJCU Redevelopment, Sites 90/184 and a Portion of Site 153 or any supplementation or modification thereto approved by NJDEP, including the April 17, 2008 Remedial Action Technical Specifications, Study Area 5, New Jersey City University Redevelopment.

34. **Residential AOC** shall mean the area which is shaded in blue on Figure 6A of the approved RAWP, attached hereto as Exhibit A.

35. **Riverkeeper** shall mean the plaintiffs in *Hackensack Riverkeeper, Inc. v. Honeywell International Inc.*, D.N.J., Civ. No. 06-22 (DMC), and includes the Hackensack Riverkeeper, Inc., William Sheehan, Reverend Winston Clarke, and Lawrence Baker.

36. **Sediment Consent Order** shall mean the Consent Order on Sediment Remediation and Financial Assurances, entered by the Court on May 28, 2008, in *ICO v. Honeywell* and this Consolidated Litigation.

37. **Shallow Groundwater** or **Shallow Level of Groundwater** shall mean groundwater above the meadow mat, groundwater at stratigraphically equivalent depths in locations where there is no meadow mat, and groundwater that is contaminated by recent contact with COPR or other chromium soil contamination above the meadow mat and subsequently flows downward through or past the meadow mat into the upper portion of the lacustrine sediments. This does not include groundwater found in the bedrock, the deep zone, or any plume of contamination that is in both the intermediate and deep zones, as those zones are defined in the Final Groundwater Investigation Report, prepared in *ICO v. Honeywell*, dated February 2007, p. 1-2.

38. **Site** shall mean the NJCU Redevelopment Area.

39. **Site 79 Consent Decree** shall mean the Consent Decree Regarding Sites 79 and 153 South submitted to the Court contemporaneously with this Consent Decree.

40. **Site 79 Residential Properties** shall mean the properties within Site 79 owned by Elisabeth and Rafael Rosario and Michael Vo, consisting of Block 1292, Lot 49, and Block 1292, Lot 50, located at 93 and 95 Fisk Street, Jersey City, New Jersey, respectively.

41. **Site 153 North** shall mean the portion of Chromate Chemical Production Waste Site 153 that is part of the Commercial AOC.

42. **Site 153 South** shall mean the portion of Site 153 that abuts Site 117, the Garfield Home Furnishing Center, and the Regnal Realty Property, and is bounded to the north by the southern property line of the NJCU Redevelopment Area and to the south by Danforth Avenue.

43. **Soil** shall mean soils, historic fill, and/or COPR.

44. **Study Area 5** shall mean the property designated by NJDEP as Sites 79, 90, 117, 153, and 184 of the Chromate Chemical Production Waste Sites, including (a) all the property owned by Bob Ciasulli, consisting of Block 1291, Lot 76, and Block 1292, Lots 1F, 47, 48, 53, and 54PL, located at 540 Route 440, Jersey City, New Jersey, (b) all the property owned by Elisabeth and Rafael Rosario, consisting of Block 1292, Lot 49, located at 93 Fisk Street, Jersey City, New Jersey, (c) all the property owned by Michael Vo, consisting of Block 1292, Lot 50, located at 95 Fisk Street, Jersey City, New Jersey, (d) all the property owned by Jersey City Fields LLC, consisting of Block 1285.5, Lot 1, located at 440 Route 440, Jersey City, New Jersey, (e) all the property owned by 425/445 Route 440 Property LLC, consisting of Block 1289.5, Lot E, Jersey City, New Jersey, and (f) all the property owned by NJCU, consisting of Block 1286, Lots 5 and 6D, and Block 1286.5, Lots 1 and 2, Jersey City, New Jersey.

45. **Study Area 5 Shallow Groundwater** shall mean the shallow groundwater in Study Area 5 excluding the shallow groundwater in the NJCU Commercial AOC and Residential AOC, but including the shallow groundwater in Site 153 North.

46. **Study Area 6 North** shall mean the property comprising Sites 87 and 88 of the Chromate Chemical Production Waste Sites designated by NJDEP, which is subject to the Study Area 6 North Consent Decree.

47. **Study Area 6 North Consent Decree** shall mean the Consent Decree and Order Regarding Remediation and Redevelopment of Study Area 6 North, entered by the Court on April 21, 2008, in the Consolidated Litigation.

48. **Study Area 6 South** shall mean the property comprising Sites 73, 124, 125, 134, 140, and 163 of the Chromate Chemical Production Waste Sites designated by NJDEP, which is subject to the Study Area 6 South Consent Decree.

49. **Study Area 6 South Consent Decree** shall mean the Consent Decree and Order Regarding Remediation and Redevelopment of Study Area 6 South, entered by the Court on December 29, 2008, in the Consolidated Litigation.

50. **Study Area 6** shall mean Study Area 6 North and Study Area 6 South, collectively.

51. **Study Area 7** shall mean (a) the property currently owned by Bayfront Redevelopment LLC, located at 425 and 445 Route 440, Jersey City, Hudson County, New Jersey and (b) the property currently owned by Bayfront Redevelopment LLC, located at 465 Route 440, Jersey City, Hudson County, New Jersey.

52. **Subject Matter of the Consolidated Litigation** shall mean those matters set forth in Riverkeeper's Complaint, as amended.

53. **Subject to Comment by Riverkeeper and NJCU and Approval by the Special Master** shall mean that Honeywell shall submit a plan, report, or other document to Riverkeeper, NJCU and the Special Master. Riverkeeper, NJCU and the Special Master shall have the right to make comments, to which Honeywell shall respond. Unless there is consensus, the Special Master shall issue a recommendation. Any Party may challenge this recommendation by motion to the Court, but the Parties are not required to seek a ruling by the Court.

54. **Subject to Review and Comment by the Non-Honeywell Parties with an Interest** shall mean that Honeywell shall submit to the Non-Honeywell Parties with an Interest only those investigations, plans, reports, or other documents listed in paragraph 108(b) or expressly specified herein as being Subject to Review and Comment by the Non-Honeywell Parties with an Interest. Non-Honeywell Parties with an Interest shall have the right to make comments on each submitted item, to which Honeywell shall respond. In the event that the Parties are not able to reach agreement, any Party may seek resolution of the dispute by motion to the Court, but the Parties are not required to seek a ruling by the Court.

55. **Technical Requirements for Site Remediation** shall mean the NJDEP Technical Requirements for Site Remediation, N.J.A.C. Chapter 26E, as duly and properly promulgated and amended.

56. **Top 4 Feet Soils** shall mean those soils and Clean Fill in the Residential AOC to a depth of four feet below final redevelopment grade following remediation pursuant to paragraph 72.

57. **Unrestricted Use** shall mean that the contaminated medium is restored to a condition or quality suitable for all uses.

58. **Unrestricted Use No Further Action Determination** shall mean a No Further Action Letter issued by NJDEP pursuant to N.J.A.C. § 7-26C-2.6(c)(1)(i) or a Remedial Action Outcome issued by a New Jersey Licensed Site Remediation Professional in accordance with regulations then in effect stating that the specified area meets the requirements for Unrestricted Use.

ARTICLE II: SCOPE OF THE CONSENT DECREE, JURISDICTION, AND CLAIMS RESOLVED

59. This Court has jurisdiction over the Parties and subject matter of the Consolidated Litigation pursuant to Section 7002 of RCRA, 42 U.S.C. § 6972, and 28 U.S.C. § 1331.

60. For purposes of this Consent Decree, the Riverkeeper Complaint in the Consolidated Litigation states claims upon which relief may be granted against Honeywell with regard to the NJCU Redevelopment Area.

61. In the event that this Consent Decree is not terminated by one or more Parties pursuant to paragraph 146, this Consent Decree resolves, settles, and satisfies all claims by Riverkeeper against Honeywell, NJCU, and Carlos Hernandez with respect to soils and shallow groundwater at the NJCU Property and soils at Site 153 North. This Consent Decree does not resolve any claims by Riverkeeper against Honeywell with respect to the Site 79 Residential Properties, the Regnal Realty Property, or Study Area 5 Shallow Groundwater. Riverkeeper hereby forever settles, releases, compromises, waives, remises, discharges, and acquits NJCU, its predecessors, successors, subsidiaries, assigns, affiliates, and parent and the officers, agents, directors, any employees and any of them, including Carlos Hernandez, from each and every claim relating to the Subject Matter of the Consolidated Litigation that may exist as of the date of entry of this Consent Decree, whether known or unknown, and any claim which may hereafter arise against any one or more of them arising out of or relating to the Subject Matter of the Consolidated Litigation, and any claim that could have been brought prior to the date of entry of this Consent Decree relating to the Subject Matter of the Consolidated Litigation, except that it is agreed that this provision does not release NJCU or the president of NJCU, in his/her official capacity, from any claims that may arise with regard to breach or enforcement of the terms and conditions of this Consent Decree or the Global Financial Assurances Order, in the event that

NJCU becomes a party to the Global Financial Assurances Order. Further it is agreed that no officer, director, employee, or agent of NJCU, including Carlos Hernandez, shall have any personal obligation or liability under this Consent Decree.

62. Nothing in this Consent Decree shall be construed or interpreted to waive any claim or defense any Party has asserted or may assert against any third party in the Consolidated Litigation, except as explicitly stated herein.

63. This Consent Decree does not constitute an admission of any allegation, claim, or liability on the part of any Party with respect to any claims, cross-claims, or counter-claims in the Consolidated Litigation and each Party expressly denies those allegations and claims made against it as well as any liability resulting therefrom.

ARTICLE III: CHROMIUM REMEDIATION

A. General Terms of Chromium Remedy

64. **Responsibility for Implementation of Chromium Remediation.** Honeywell shall be responsible for implementing the Chromium Remedies set forth in this Consent Decree and shall undertake remediation of COPR and chromium present at the NJCU Redevelopment Area under this Consent Decree. Honeywell shall perform its obligations under this Consent Decree without regard to whether it has or may have any claims, agreements, or rights, now or in the future, including for contribution, indemnity, or cost recovery, against any other entity. The terms and conditions of the Indemnity and Remediation Agreement dated December 30, 2003, among Honeywell, NJCU, and BSC Properties, Inc., as such may be amended or modified in writing by Honeywell and NJCU, shall remain in effect as between Honeywell and NJCU, but such agreement shall not limit Honeywell's performance of its responsibilities under this Consent Decree. Honeywell shall perform the remediation of COPR and chromium present at the

NJCU Redevelopment Area in accordance with the terms of the approved Remedial Action Work Plan and this Consent Decree.

65. **Scope and General Requirements of the Chromium Remedy.** The Chromium Remedy shall consist of the Residential AOC Soil Remedy, the Commercial AOC Soil Remedy, and the Shallow Groundwater Remedy as prescribed in this Article. The Chromium Remedy shall be consistent with the requirements set forth in this Article. The Chromium Remedy set forth in this Consent Decree addresses only the shallow level of groundwater at the NJCU Property. The shallow groundwater at Site 153 North is not addressed by this Consent Decree. The deep overburden and bedrock groundwater remediation, including source control, are addressed in the Deep Groundwater Consent Order.

66. **Consistency of the Chromium Remedy with NJDEP Guidance and Remedial Action Work Plan.** The Chromium Remedy shall be consistent with the Technical Requirements for Site Remediation, the NJDEP Chromium Policy, and the Remedial Action Work Plan approved by NJDEP, and the NJCU Development Plan. In the event of any conflict or inconsistency between this Consent Decree and any Remedial Action Work Plan approved by NJDEP, the provisions of this Consent Decree shall control. However, nothing in this Consent Decree shall limit NJDEP's authority to require Honeywell, other Parties, or third parties from undertaking remedial activities at the NJCU Redevelopment Area in addition to those required by this Consent Decree.

67. **Coordination with Historic Fill Remedy.** The Chromium Remedy shall be carried out diligently, and the development and implementation of the Historic Fill Remedy or any other remedy required for non-chromium contamination shall be coordinated by Honeywell and NJCU so as to not unreasonably delay satisfaction of the milestones in the Master Schedule established pursuant to paragraph 107.

68. **Demolition and Grading Activities.** During demolition and grading activities associated with the Chromium Remedy, Honeywell shall take adequate protective measures to protect Site workers and the community from airborne dusts and exposures to contaminated soils in accordance with applicable laws, regulations and orders, and health and safety standards.

69. **Clean Fill Requirement.** In all areas requiring the placement of Clean Fill, the materials used as Clean Fill shall comply with the criteria set forth in subparagraphs (a) through (c) based on the source and fate of the Clean Fill:

(a) Dirt, soils, backfill, or other fill materials (including stone, gravel, or dense graded aggregate (DGA) materials) brought onto the NJCU Redevelopment Area shall meet all applicable federal and New Jersey Department of Environmental Protection criteria for unrestricted use, including NJDEP residential soil criteria, or, alternatively, shall comply with a beneficial soil reuse plan that has been approved by the Parties and by the NJDEP. Such approval shall not be unreasonably withheld by the Parties. Such materials shall also have a hexavalent chromium concentration of 1 mg/kg or less.

(b) For any dirt, soil, backfill or other fill materials, including Historic Fill disturbed on the NJCU Redevelopment Area during construction and subsequently reused on the Site as Clean Fill at elevations of 4 feet or less below final redevelopment grade, such materials shall have a hexavalent chromium concentration of 5 mg/kg or less and shall comply with the capping requirements of the Historic Fill Remedy.

(c) For any dirt, soil, backfill or other fill materials, including Historic Fill, disturbed on the NJCU Redevelopment Area during construction and subsequently reused on the Site as Clean Fill at elevations greater than 4 feet, but less than or equal to 20 feet, below final redevelopment grade, such materials shall have a hexavalent chromium concentration of 20 mg/kg or less.

70. **Maintenance and Vegetation of Clean Fill.** Honeywell shall plant grass or other vegetation in all areas of the Chromium Remedy that will not involve paved or gravel roads or surfaces, sidewalks, paths, or walkways, or building structures, in such a manner as to protect and maintain the required depth of Clean Fill and to ensure that such vegetation shall not cause any interference with or penetration of the Commercial AOC cap. NJCU shall thereafter maintain the required depth of the Clean Fill and its cover vegetation as set forth in paragraphs 73 and 74(b). NJCU shall be responsible for any further vegetation consistent with the NJCU Redevelopment Plan.

71. **Permits and Authorizations.** Honeywell shall obtain all necessary federal, state, and local permits and authorizations to carry out the Chromium Remedy. NJCU agrees to cooperate with Honeywell, at no expense to NJCU, in the applications for any such permits, authorizations, or approvals. Such cooperation shall include providing information or data with respect to permit applications, co-signing permit applications, and allowing access to the Site to obtain information necessary for the permits.

B. Residential AOC Soil Remedy

72. **Residential AOC Soil Remedy.** In the Residential AOC, Honeywell shall:

(a) Excavate Greater Than 20 Soils to a depth of 20 feet below ground surface in the areas designated for excavation and shown in cross-hatch in Figure 6A of the approved RAWP (Exhibit A);

(b) Excavate Greater Than 5 Soils to a depth of 4 feet below final redevelopment grade;

(c) Except as provided in subparagraph (a), excavate Greater Than 20 Soils at depths greater than 4 feet below final redevelopment grade, but less than or equal to 20 feet below final redevelopment grade.

(d) Remove and dispose of Greater Than 20 Soils excavated from the Residential AOC off-Site in accordance with all applicable laws and regulations.

(e) With regard to the Greater Than 5 Soils excavated from the Residential AOC either (i) remove and dispose of them off-Site in accordance with all applicable laws and regulations; or (ii) to the extent that such soils do not constitute Greater Than 20 Soils, place them in the Residential AOC at depths greater than 4 feet below final redevelopment grade.

(f) Backfill all excavated areas of the Residential AOC to final redevelopment grade pursuant to the Clean Fill requirement in paragraph 69. In areas excavated pursuant to subparagraph (b), Honeywell shall place a demarcation layer (snow fence, geotextile liner or similar material) immediately below the 4 feet before backfilling with Clean Fill to final redevelopment grade.

(g) Conduct further soil sampling during remedial design to further define and delineate areas where Greater than 5 Soils are present to a depth of 4 feet below final redevelopment grade in the Residential AOC. Excavation pursuant to subparagraph (c) shall be conducted based on existing data. Confirmatory sampling in the Residential AOC excavation areas shall be conducted in accordance with the Technical Requirements for Site Remediation.

73. **Management of Soil Remedy.** Following remediation pursuant to paragraph 72, NJCU shall use reasonable efforts to maintain the soils and Clean Fill in the Residential AOC during construction or other activity that involves disturbance of any soil or Clean Fill so that Below 4 Feet Soils are segregated and managed in such a way as to prevent them from being commingled in any way with Top 4 Feet Soils, unless the Top 4 Feet Soils will be treated as if they are Below 4 Feet Soils for purposes of handling, return, and/or disposal pursuant to this paragraph. Honeywell and NJCU shall both be responsible for handling and disposing of any Below 4 Feet Soils that cannot be returned to a depth greater than 4 feet below final

redevelopment grade. To the extent that such soils are disposed of off-Site, such disposal shall be in accordance with all applicable laws and regulations.

C. Commercial AOC Soil Remedy

74. **Commercial AOC Cap**. In the Commercial AOC, the soil remedy shall consist of the placement of an engineered RCRA cap (absent soil gas venting) to isolate contaminated soils. The cap shall be designed and constructed so that:

(a) The cap shall consist of a base protective layer, an impervious geomembrane liner with a minimum thickness of 40 mil; a geocomposite drainage layer; a filter fabric; and a distinctive colored warning layer with markings in English and Spanish that would deter penetration of the cap in the event that digging occurred in the vicinity of the cap. Together, the layers set forth in this subparagraph shall constitute the "cap";

(b) Exclusive of roadways, pavement, building foundations, parking lots, or other impervious surfaces, the cap shall be overlain by layers of Clean Fill, in accordance with subparagraph (c) below and paragraph 69, with a depth of at least three feet in those areas subject to planting with trees or bushes pursuant to either the NJCU Redevelopment Plan or any further agreement between Honeywell and NJCU and a minimum depth of at least two feet in other vegetated areas. One foot of Clean Fill in accordance with subparagraph (c) below and paragraph 69, covered with bituminous blacktop, shall be sufficient cover where roads, walkways, or other paved surfaces are located within the Commercial AOC.

(c) The existing soils in the Commercial AOC may be stripped off and set aside for use, if appropriate, during cap construction.

(i) Any Greater Than 20 Soils stripped off and set-aside shall either be placed under the cap or disposed of off-Site in accordance with applicable laws and regulations.

(ii) Any Greater Than 5 Soils stripped off and set aside during cap construction that are not also Greater Than 20 Soils may be placed at depths greater than 4 feet below final redevelopment grade in the Residential AOC or disposed of off-Site in accordance with applicable laws and regulations.

(iii) Any soils that have been stripped off may be reused as fill above the cap provided that such soils are not Greater Than 5 Soils.

(iv) Any Clean Fill placed above the cap shall be suitably compacted according to design specifications.

(v) Debris, to the extent it would interfere with the compaction specification requirements for final redevelopment design, shall not be placed under the cap, but shall be recycled, reused, or disposed of in accordance with all applicable state and federal laws and regulations.

75. **Initial Cap Completion.** After initial completion of the construction of the cap, Honeywell shall install an asphalt surface cover in the Lot 7 portion (excepting side slopes) of the Commercial AOC consisting of a 2-inch wearing course, 2-inch base course, and a 6-inch suitable sub-base (DGA or equivalent) suitable for use as a surface parking lot during the course of Phase I of the NJCU Development Plan (Exhibit B) and before NJCU constructs a building identified as Building 7 in Phase II of the NJCU Development Plan.

76. **Coordination of Cap with Future Construction of Building 7.** If NJCU advances to Phase II of the NJCU Development Plan and determines to undertake development of Building 7 as shown conceptually on Exhibit B attached hereto, NJCU and Honeywell shall cooperate in coordinating the construction schedule and construction of Building 7 with any necessary and/or required disturbance, repair, and replacement of the cap at elevations set forth in this paragraph. Honeywell recognizes that construction of Building 7 may require (a)

relocation of Clean Fill and removal of the geomembrane liner and other components of the cap within some or all of the Building 7 footprint area; (b) excavation and disposal of capped soils from the Building 7 footprint area to allow for reinstallation of the geomembrane liner at an elevation to accommodate building foundation design expected to be approximately 12 feet to 14 feet above mean sea level ("MSL"), (c) reinstallation of the geomembrane layer and other cap components to integrate the cap with construction of Building 7, and (d) such further work as may be necessary and/or required by the NJDEP to implement the above work and so that construction of Building 7 may proceed. Honeywell shall seek and obtain NJDEP approval or Licensed Site Remediation Professional approval, if required by law, for the further Chromium Remedy activities set forth in this paragraph and to perform such activities prior to construction of Building 7 in a timely manner so as not to unreasonably affect the construction, timing, and schedule of NJCU for the construction of Building 7. Honeywell shall present the work plan for the further Chromium Remedy in a document that is Subject to Review and Comment by the Non-Honeywell Parties with an Interest and approval by NJDEP.

77. **Further Remediation upon Future Unrestricted Use of the NJCU Commercial AOC.** At any time after January 1, 2030, if NJCU or a future owner of the NJCU Commercial AOC prepares a development plan similar in level of detail to Exhibit B to change all or any part of the NJCU Commercial AOC to residential or other uses currently prohibited under paragraph 87, it shall inform Honeywell and Riverkeeper. Within 90 days of receiving such written notice, Honeywell shall propose further remedial action, as necessary, for the entire NJCU Commercial AOC, to meet NJDEP's requirements for Unrestricted Use of the NJCU Commercial AOC in effect at that time and a schedule for undertaking such further remedial action in conjunction with the proposed development plan. Such proposal shall be presented by Honeywell in a document that is Subject to Review and Comment by the Non-Honeywell Parties

with an Interest. Following such review and comment by the Non-Honeywell Parties with an Interest and approval by NJDEP, Honeywell shall undertake the further remedial action pursuant to the schedule to be coordinated with NJCU or any future owner. Upon completion of such remedial actions, Honeywell and NJCU or any future owner shall apply to terminate the Deed Notice provisions restricting use and protecting the engineering controls that have been removed. As between the Parties, Honeywell shall undertake, at its sole cost and expense, to perform all Chromium Remedy work as required by law, pursuant to the then existing NJDEP standards and requirements for remediation to Unrestricted Use, including removal of the geomembrane cap, any excavation or treatment of existing chromium contaminated soils, and replacement with Clean Fill as required by law. The Parties shall use all reasonable efforts to undertake their respective responsibilities under this paragraph in a timely manner in coordination with, and so as not to unreasonably delay, planned redevelopment. Nothing in this paragraph shall prevent NJCU or a future owner from undertaking such further remediation at its sole cost and expense prior to January 1, 2030. Neither NJCU nor a future owner shall have any obligation to undertake such further remediation. However, NJCU or a future owner must comply with paragraph 87 until further remediation is undertaken pursuant to this paragraph and an Unrestricted Use No Further Action Determination is issued for the NJCU Commercial AOC.

78. **Utility Corridors.** With the exception of existing utilities located on Site 153 North and any extraction wells, monitoring wells, or collection trenches, all utilities in the Commercial AOC shall be placed above the Commercial AOC cap (but may be below the ground surface and/or contained within clean utility corridors). In the event that, in the performance of the Chromium Remedy, Honeywell discovers any abandoned non-functioning utilities, Honeywell shall either remove and dispose of them off-Site if necessary to perform the Chromium Remedy or leave such utilities in place and report in writing to the Parties. The

location and elevation of such abandoned and non-functioning utilities left in place shall be disclosed in the "as-built" drawings for the Commercial AOC Cap.

79. **Commercial AOC Utility Map.** Honeywell shall create a map of the utilities in the Commercial AOC that indicates the area where Greater Than 20 Soils have been determined to be present and provide such map to the Parties and to all entities with regulatory authority over utilities present in the Commercial AOC.

80. **Access Point Warnings.** Honeywell shall provide distinctive warnings in English and Spanish at sewer access points within Site 153 North, including manhole covers, that inform the reader of the presence of chromium at Site 153 North.

81. **Initial Site 153 North Remedy.** For those chromium-contaminated soils in Site 153 North that are not covered by the Commercial AOC cap, the existing surficial pavement shall constitute an engineering control. In the event that such pavement is disturbed as a result of any work associated with the Chromium Remedy or redevelopment activities, Honeywell shall restore the pavement as soon as reasonably possible, unless such pavement is replaced by some equivalent surface which shall then constitute part of the engineering control.

82. **Further Remediation upon Sewer Repair or Replacement.** Further remediation shall be undertaken by Honeywell as follows:

(a) Whenever any section of the BMUA force main sewer pipeline on Site 153 North is being replaced, Honeywell shall remove or treat all soils necessary to meet NJDEP's chromium requirements for non-residential use in effect at the time, dispose of such removed material at a facility licensed to accept such materials, and replace such materials with materials deemed appropriate by BMUA and having a hexavalent chromium concentration less than the more stringent of (i) a formal New Jersey soil standard for Unrestricted Use duly adopted after the date of this Consent Decree or (ii) 1 mg/kg.

(b) Whenever any normal operating repairs for any section of the sewer on Site 153 North result in the removal of chromium soils to effectuate the repair and those soils exceed NJDEP's chromium requirements for non-residential use in effect at the time, Honeywell shall arrange for the disposal of such removed material at a facility licensed to accept such materials and replace such materials with materials deemed appropriate by BMUA and having a hexavalent chromium concentration less than the more stringent of (i) a formal New Jersey soil standard for Unrestricted Use duly adopted after the date of this Consent Decree or (ii) 1 mg/kg.

(c) Whenever any portion of ingress and egress and/or roadway areas for which NJCU holds or may in the future hold an easement over Site 153 North is being installed, repaired, or replaced, Honeywell shall remove all soils necessary to effectuate the installation, repair, or replacement that exceed NJDEP's chromium requirements for non-residential use in effect at the time, and Honeywell shall arrange for the disposal of such removed material at a facility licensed to accept such materials and replace such materials with materials deemed appropriate by NJCU and having a hexavalent chromium concentration less than the more stringent of (i) a formal New Jersey soil standard for Unrestricted Use duly adopted after the date of this Consent Decree or (ii) 1 mg/kg.

(d) Whenever any normal operating repairs on any other section of sewers, utilities, or roadways on the NJCU Property require the removal of soils that exceed NJDEP's chromium requirements for non-residential use in effect at the time, Honeywell shall arrange for the disposal of such removed material at a facility licensed to accept such materials and replace such materials with materials deemed appropriate by NJCU and having a hexavalent chromium concentration less than the more stringent of (i) a formal New Jersey soil standard for Unrestricted Use duly adopted after the date of this Consent Decree or (ii) 1 mg/kg.

(e) Whenever any contaminated materials are removed pursuant to this paragraph, to the extent allowed by the appropriate sewer utility, Honeywell shall also take appropriate steps, such as the placement of a geofabric, to ensure that new fill material does not become contaminated by any remaining contaminated soil.

(f) Whenever any contaminated materials are removed pursuant to this paragraph, Honeywell shall also update the map pursuant to paragraph 79.

83. **Worker Training Manual.** Honeywell shall develop a manual for training individuals who might be exposed to COPR, chromium-contaminated soils, or chromium-contaminated groundwater in conjunction with any utility or other subsurface work performed at the Commercial AOC ("Worker Training Manual") in conformance with Occupational Safety and Health Administration ("OSHA") rules and guidance. The Worker Training Manual shall detail all appropriate steps such individuals should take to protect themselves from exposure to chromium and shall provide procedures: (i) to identify when areas or sections of the BMUA pipeline surrounded by COPR or chromium-contaminated soil are scheduled for repair and/or replacement; (ii) to identify and implement appropriate actions to protect workers; and (iii) to coordinate with Honeywell regarding the removal of COPR or chromium-contaminated soils pursuant to paragraph 82. BMUA shall implement such program pursuant to paragraph 85.

84. **Inspection by Riverkeeper.** Riverkeeper shall have the right to enter the NJCU Redevelopment Area annually for the purposes of inspecting the Chromium Remedy thereon.

85. **BMUA Obligations.** BMUA shall develop a permanent plan to implement health and safety measures for its workers at Site 153 North in accordance with OSHA rules related to hazardous materials and shall utilize the Worker Training Manual prepared by Honeywell pursuant to paragraph 83 setting forth the procedures and protections that BMUA shall employ when it conducts activities at Site 153 North. In the event of any planned maintenance or

emergency repair of any of its pipelines located under Site 153 North that will involve any disturbance of the remedial measures required by paragraphs 74, 76, 81, and/or 82, BMUA shall notify Honeywell and Riverkeeper of the planned action(s) and the date(s) for the planned action. Notice to adjacent property owners, in the event of any planned or emergency repair or maintenance of pipelines located under Site 153 North, shall be provided in the manner described in paragraph 104.

D. Shallow Groundwater Chromium Remedy

86. **Shallow Groundwater Remedy.** The shallow groundwater remedy shall consist of:

(a) Approximately 700 linear feet of an underground barrier wall (consisting of slurry, sheetpile, or other materials generally accepted for construction of low-permeability underground barrier walls) to be placed along the western boundary of the NJCU Commercial AOC in place of the permeable reactive barrier shown on Figure 6A of the approved RAWP (Exhibit A).

(b) Approximately 920 linear feet of an underground barrier wall (consisting of slurry, sheetpile, or other materials generally accepted for construction of low-permeability underground barrier walls) to be placed along the southern boundary of the NJCU Property with the Home Depot Site 117 property as shown on Figure 6A of the approved RAWP (Exhibit A).

(c) A contingency groundwater collection system consisting of extraction well(s), trench(es), underground pumps, horizontal underdrain piping, or a combination of some or all of the preceding located in or near the Commercial AOC and including such pipes and other equipment located outside the Commercial AOC as may be necessary for such collection system. The system shall be designed to collect and convey shallow groundwater in the NJCU Commercial AOC containing chromium concentrations above NJDEP water quality standards

for chromium to a treatment plant outside the NJCU Redevelopment Area or to a local sewer connection and to maintain an inward gradient for shallow groundwater within the NJCU Commercial AOC.

E. Institutional Controls

87. **Restrictions on the Use of the NJCU Commercial AOC.** Until such time as further remedial activities are undertaken pursuant to paragraph 77 and an Unrestricted Use No Further Action Determination is issued for the NJCU Commercial AOC, residential, day care, and educational uses, other than administrative, are prohibited in the NJCU Commercial AOC. Commercial, retail, office, academic administrative use, open space, utility corridors, transportation, roadway, crossing or access to adjacent properties, or other uses that are not prohibited by the deed notice are permitted in the NJCU Commercial AOC.

88. **Annual Notice by NJCU.** Annually, beginning on January 15, 2011, and on each anniversary date in each year thereafter until such time as further remedial activities are undertaken pursuant to paragraph 77 and an Unrestricted Use No Further Action Determination is issued for the NJCU Commercial AOC, NJCU shall submit a written notice to Honeywell and Riverkeeper stating whether NJCU is in compliance with the deed notice and whether there are any uses in the NJCU Commercial AOC that are prohibited under paragraph 87 or the deed notice. Such notice shall identify all categories of uses (*e.g.*, commercial, retail, etc.) of the property since the date of the last annual notice, including new and continuing categories of uses. Honeywell and Riverkeeper will remind NJCU of this annual obligation.

89. **Transfer of Title to the NJCU Commercial AOC.** During the period prior to the issuance of an Unrestricted Use No Further Action Determination for the NJCU Commercial AOC, the following requirements shall apply:

(a) NJCU and all subsequent owners of all or any part of the NJCU Commercial AOC shall provide, within 30 days after a transfer of title to all or any part of the NJCU Commercial AOC, written notice of such transfer to the Court. The filing with the Court providing such notice shall be accompanied by the following items: (i) a consent order, substantially in the form of Exhibit D, attached hereto, to which all Parties are hereby deemed to have consented, that shall be executed by all Parties and the transferee and provide for the transferee to be added as a limited party to this Consent Decree solely as to the provisions of this Consent Decree as set forth in subparagraph (b); and (ii) a motion requesting the Court to approve and enter the consent order.

(b) Upon becoming a limited party to this Consent Decree, the transferee shall have: (i) all of the rights and benefits applicable to NJCU set forth in this Consent Decree as they pertain to the NJCU Commercial AOC, including the right to enforce the obligations of Honeywell under paragraphs 64-86, 90, 91(a), 92, 95, 96-105, 107, 108(b) and (c), 110, 113, and 152 and the obligations of Riverkeeper under this Consent Decree; (ii) the protections afforded by the financial assurances provided under Article V of this Consent Decree, including the right to enforce Honeywell's obligations thereunder; and (iii) only those responsibilities applicable to NJCU as set forth in paragraphs 70-71, 73, 76, 84, 87-89, 91(b), 92-94, 104-105, and 152 of this Consent Decree. The provisions of this paragraph apply regardless of the manner in which the title to all or any part of the NJCU Commercial AOC is transferred from one owner to another.

90. **Pre-Transfer Certification by Honeywell and Riverkeeper.** Prior to any transfer of title to all or part of the NJCU Commercial AOC, NJCU or a subsequent owner may make a written demand of Honeywell and Riverkeeper to each deliver to the requester any documents reasonably requested in the demand and a certification that includes the following:

(a) A statement as to whether the Consent Decree is in full force and effect;

(b) A statement as to whether the Consent Decree has been modified or amended and, if so, in what manner it has been modified or amended; and

(c) A statement as to whether at the time of such certification there are any known breaches that are subject to a pending or intended motion to enforce this Consent Decree or constitute a default pursuant to paragraphs 122 or 133 with regard to any requirement under this Consent Decree applicable to the NJCU Commercial AOC.

Honeywell and Riverkeeper shall each deliver to the requester within 15 days of receipt of the demand the requested documents and certification. Unless the Parties have agreed to extend the time for response to a demand made pursuant to this paragraph, NJCU or the subsequent owner shall have the right to apply to the Court on short notice for an order to show cause for failure to make a timely and full response to a demand made pursuant to this paragraph.

91. **Deed Notices.** The following deed notices shall be recorded:

(a) **Site 153 North Deed Notice.** Within 90 days of the completion of the remedial measures required by paragraphs 74 and 81, Honeywell shall record a deed notice for Site 153 North, in the form attached hereto as Exhibit E, including the following provisions:

(i) Notice of the presence of chromium contamination at Site 153 North;

(ii) Notice that Clean Fill, caps, including the Commercial AOC cap, and asphalt or other pavement covers each constitute an engineering control that must be maintained in accordance with the Technical Requirements for Site Remediation;

(iii) A restriction limiting the future uses of Site 153 North to open space, utility corridor, transportation, roadway, crossing, or access to adjacent properties.

Such deed notice shall encumber Site 153 North until such time as an Unrestricted Use No Further Action Determination is issued for Site 153 North. During the period in which Site 153

North is encumbered by the deed notice, Honeywell shall comply with the requirements of the deed notice. At the time the biennial reports required by the deed notice are submitted to NJDEP, Honeywell shall provide copies of the reports to Riverkeeper. The deed notice shall be enforceable against Honeywell in the Consolidated Litigation.

(b) **NJCU Commercial AOC Deed Notice.** Within 90 days of the completion of the remedial measures under paragraphs 74 and 86, NJCU shall record a deed notice for the NJCU Commercial AOC in the form attached hereto as Exhibit F. The deed notice shall encumber the NJCU Commercial AOC until such time as further remedial activities are undertaken pursuant to paragraph 77 and an Unrestricted Use No Further Action Determination is issued for the NJCU Commercial AOC. Upon completion of further remedial activities pursuant to paragraph 77, the deed notice shall be modified to (i) allow for Unrestricted Use of the NJCU Commercial AOC; (ii) identify any Greater Than 20 Soils remaining at depths greater than 20 feet below ground surface, if such conditions exist; and (iii) identify those engineering controls, if any, which may remain in place, such as any shallow groundwater remedy components installed pursuant to paragraph 86. During the period in which the NJCU Commercial AOC is encumbered by the deed notice, NJCU and Honeywell shall comply with the requirements of the deed notice. At the time the biennial reports required by the deed notice are submitted to NJDEP, NJCU and Honeywell shall provide copies of the reports to Riverkeeper. The deed notice shall be enforceable against NJCU and Honeywell in the Consolidated Litigation.

92. **Recording of the Deed Notices.** The deed notices for Site 153 North and the NJCU Commercial AOC shall be recorded pursuant to N.J.S.A. §§ 46:15-1.i, 46:16-1.1, 46:16-2, and 58:10b-13, in the Office of the Hudson County Register and a conspicuous reference to the Consent Decree and deed notices shall be included in all instruments concerning title to Site 153

North and the NJCU Commercial AOC, as the case may be, as long as the respective property is required to be encumbered by the deed notice.

93. **NJCU Transfer of the NJCU Commercial AOC to Itself.** Within 30 days after the recording of the deed notice pursuant to paragraph 92, NJCU shall execute a deed, in the form and substance attached hereto as Exhibit G, with respect to all separate lots and blocks that may be included within the NJCU Commercial AOC and shall record the deed in the Office of the Hudson County Register. Such transfer is for the purpose of creating a deed that informs future owners of all or any part of the NJCU Commercial AOC of the deed notice and this Consent Decree. This Consent Decree shall be recorded at the same time as such deed.

94. **Language in Future Deeds and Ground Leases for the NJCU Commercial AOC.** Following the transfer pursuant to paragraph 93 and continuing until such time as an Unrestricted Use No Further Action Determination is issued for the NJCU Commercial AOC, any deed for all or any part of the NJCU Commercial AOC shall contain the terms set forth in paragraphs 5 and 6 of Exhibit G without modification.

95. **Ownership of and Access to Site 153 North.** Honeywell shall not voluntarily convey fee simple title to Site 153 North to any other person or entity, unless Site 153 North has been remediated such that no hexavalent or total chromium contamination remains at Site 153 North, whether in soils or in groundwater, in excess of the levels and at depths specified by NJDEP for Unrestricted Use in place at the time of the proposed sale or lease. Nothing in this paragraph shall prohibit Honeywell from granting easements or leases on Site 153 North to third parties without remediating to Unrestricted Use, provided that such easements or leases are for the purposes identified in paragraph 91(a)(iii). In the event that a future easement holder or lessee uses Site 153 North for purposes other than those identified in paragraph 91(a)(iii), the particular easement or lease shall be deemed void and Honeywell shall so provide in each future

easement and lease instrument. Honeywell shall provide notice to Riverkeeper of each easement and lease granted, other than the current easement granted on Site 153 North.

F. Long-Term Monitoring

96. **Honeywell's Ongoing Responsibility.** Honeywell shall be responsible for implementing, monitoring, maintaining, repairing, and replacing the Chromium Remedy at (i) the NJCU Commercial AOC until Honeywell's completion of further remedial activities pursuant to paragraph 77 and its receipt of an Unrestricted Use No Further Action Determination for hexavalent chromium for the NJCU Commercial AOC; and (ii) Site 153 North until Honeywell's completion of further remedial activities pursuant to paragraph 82 and its receipt of an Unrestricted Use No Further Action Determination for hexavalent chromium for Site 153 North. Honeywell shall satisfy this responsibility through establishment and implementation of a Long-Term Monitoring Plan. In the event that Honeywell ceases to exist without a successor-in-interest or its obligations under this Consent Decree are stayed or limited due to a bankruptcy petition, the Court shall appoint an independent third-party fiduciary who shall be responsible for implementing, monitoring, maintaining, repairing, and replacing the Chromium Remedies pursuant to the requirements of this Consent Decree and the Long-Term Monitoring Plan, except to the extent that NJCU and/or a future owner of all or part of the NJCU Commercial AOC volunteers in writing to assume all or part of Honeywell's responsibilities for the Chromium Remedies.

97. **Long-Term Monitoring Plan.** Subject to Review and Comment by the Non-Honeywell Parties with an Interest, Honeywell shall develop a Long-Term Monitoring Plan to ensure the ongoing effectiveness of the Chromium Remedies to meet the objectives set forth in paragraph 98. The Long-Term Monitoring Plan shall be consistent with the applicable EPA policies and guidance, including, among others, EPA's Comprehensive Five Year Review

Guidance (2001) (or any subsequent revision) and with the Technical Requirements for Site Remediation.

98. **Long-Term Monitoring Plan Objectives.** Honeywell shall design the Long-Term Monitoring Plan to satisfy each of the following objectives:

(a) Provide monitoring to ensure that the integrity and effectiveness of the Chromium Remedies are maintained; and

(b) Provide monitoring to ensure that the restrictions of the institutional controls are being satisfied, including the use restrictions on the NJCU Commercial AOC and Site 153 North as set forth in the respective deed notices and paragraphs 87 and 91(a)(iii).

99. **Monitoring Activities in the Long-Term Monitoring Plan.** Honeywell shall undertake the following monitoring activities, which shall be described in more detail in the Long-Term Monitoring Plan, at intervals no less frequent than set forth below. If the results of Honeywell's monitoring show that a Chromium Remedy is compromised or threatens to become compromised, Honeywell shall undertake the remediation activities as set forth below:

(a) Quarterly visual inspection monitoring of the NJCU Commercial AOC and Site 153 North to ensure that neither is being put to any prohibited use or any use that would jeopardize the integrity or effectiveness of the Chromium Remedies. If Honeywell determines that the NJCU Commercial AOC is being used in a manner that would jeopardize the integrity or effectiveness of the Chromium Remedy, Honeywell shall notify Riverkeeper, NJCU, and NJDEP, and cooperate with NJCU and, if necessary, NJDEP to cause such use to cease as soon as possible. If there has been damage to the Chromium Remedy as a result of such use, Honeywell shall repair or replace it to original specifications or to a level of protection at least equivalent to the original Chromium Remedy. In such event, this Consent Decree shall not

waive or limit any claims, rights, or causes of action Honeywell may have against any person to the extent that such person caused such damage to the Chromium Remedy.

(b) Quarterly visual inspection monitoring of the grade and slope in the Commercial AOC to identify whether erosion has occurred or is occurring in such a manner as to jeopardize the protectiveness of the Commercial AOC cap. Honeywell shall address any erosion that jeopardizes the protectiveness of the cap.

(c) Quarterly visual inspection monitoring to determine whether noticeable differential settlement or subsidence has occurred or is occurring in the Commercial AOC such that the integrity of the Chromium Remedy may be materially impaired. Honeywell shall address any differential settlement or subsidence that is beyond the degree of differential settlement/subsidence allowed for in the Final 100% Remedial Design and repair the cap and/or the overlying layers to original Final 100% Remedial Design specifications or to a level of protection at least equivalent to the original Chromium Remedy..

(d) Quarterly visual inspection monitoring to determine whether the Chromium Remedy in the Commercial AOC has been disturbed other than a planned disturbance in connection with commercial development or BMUA sewer repair or replacement. Any evidence of the distinctive warning layer materials or any other cap materials as described in paragraph 74(a) at the surface is an indication that the cap has been disturbed. In such an event, Honeywell shall undertake further investigative measures to evaluate whether the integrity of the cap has been compromised or the contingency system for water level maintenance has been disturbed. In the event that the investigative measures show that the cap integrity has been compromised, Honeywell shall repair or replace the cap and the overlying layers to original Final 100% Remedial Design specifications or to a level of protection at least equivalent to the original Chromium Remedy. In the event that the investigative measures show that the contingency

system for water level maintenance has been disturbed, Honeywell shall repair or replace the system to original Final 100% Remedial Design specifications or to a level of protection at least equivalent to the original Chromium Remedy.

(e) Quarterly visual inspection monitoring to ensure that burrowing animals are not materially impairing the integrity of the Chromium Remedy in the Commercial AOC. If evidence of burrowing animals is found, Honeywell shall follow accepted removal procedures and repair or replace the cap and the overlying layers to original Final 100% Remedial Design specifications or to a level of protection at least equivalent to the original Chromium Remedy.

(f) Quarterly visual inspection monitoring of the vegetative cover, including landscaping, if any, in the Commercial AOC to ensure that vegetative cover will not materially impair the integrity of the Chromium Remedy.

(g) Quarterly groundwater elevation monitoring to ensure that groundwater levels are maintained in accordance with the requirement to maintain an inward gradient for shallow groundwater in the Commercial AOC cap and in accordance with the water level control plan developed pursuant to the Study Area 6 North Consent Decree and subject to reasonable modification, if necessary, for purposes of coordinating with any Study Area 5 Shallow Groundwater remedy.

(h) Monitoring during any development or construction in the NJCU Commercial AOC to ensure that at the conclusion of the construction activity, the maintenance, repair, or replacement of the cap and other engineering controls in the NJCU Commercial AOC are restored to the specifications set forth in the Final 100% Remedial Design or to a level of protection at least equivalent to the original Chromium Remedy.

(i) Monitoring during any development, construction, or other activities in the Residential AOC that involve disturbance of the Below 4 Feet Soils to ensure that such activities are being undertaken in a manner to satisfy the requirements of paragraph 73.

(j) Annual inspections of Site 153 North to ensure that all pavement is in good condition and does not have potholes or cracks that penetrate the pavement. The inspection shall take place in April or May of each year. Any potholes or cracks that do not penetrate the pavement shall be repaired as part of regular maintenance that takes place at least annually. Potholes or cracks that penetrate the pavement shall be repaired immediately and, if 10% or greater of a localized area or 25% or greater of the entire paved area suffers from such disturbances, Honeywell shall repave such portion(s) as are necessary to maintain the pavement in good condition.

(k) Annual inspection, and repair and/or replacement as necessary, of all warning signs on Site 153 North.

(l) Annual review, updated as necessary based on changes to field conditions and/or regulatory requirements, of the Worker Training Manual.

100. **Procedures for Proposing Changes to the Long-Term Monitoring Plan.** Any Party may, from time to time, propose changes to the scope of the monitoring activities under the Long-Term Monitoring Plan. If the Parties agree, the Long-Monitoring Plan shall be so changed subject to NJDEP approval as necessary. If the Parties are unable to reach agreement over alterations to the monitoring, any Party may file a motion seeking a resolution of the dispute by the Court.

101. **Contingency Plan.** As part of the Long-Term Monitoring Plan, Honeywell shall develop a contingency plan to ensure the integrity of the remediation in the event of any planned penetration of the Commercial AOC cap or any underground barrier wall or otherwise planned

activity that compromises the cap or any unplanned event or accident that penetrates the cap or otherwise compromises the integrity of the Commercial AOC Chromium Remedy. The contingency plan shall include, at a minimum, an annually updated plan to notify the relevant persons, including NJDEP, and the Parties: of (i) the event penetrating the cap, compromising the cap, or compromising the integrity of the Commercial AOC Chromium Remedy; (ii) the general steps to be taken to identify the extent of the problem; and (iii) the standards for remedying the problem.

102. **Recordkeeping**. Honeywell shall maintain written logs or other records of those monitoring and remediation activities undertaken pursuant to the Long-Term Monitoring Plan. Such logs shall be provided to the Parties on a quarterly basis.

103. **Monitoring and Reporting to the Parties**. Riverkeeper and NJCU shall be provided with all documents submitted to NJDEP with respect to the Chromium Remedies, including the documents identified in paragraph 108(b).

104. **Public Notice**. In each instance, if and when, public notice is required to be provided pursuant to N.J.A.C. 7:26E-1.4, such notice shall be made. For purposes of such public notice, the boundaries of Sites 90, 153 North and 184 shall be deemed to be the site or property boundaries. In addition, all commercial tenants on the NJCU Commercial AOC and all easement holders on Site 153 North shall be provided at the time of their purchase, lease, or establishment of the easement with written notice of the chromium contamination in the NJCU Commercial AOC and the remedial actions that have been undertaken or are planned. To the extent the purchase, lease, or easement occurred prior to entry of this Consent Decree, such notice shall be provided within 90 days of entry of this Consent Decree. All Parties and other entities identified in the subparagraphs below shall be provided notice of monitoring and maintenance activities in the following manner:

(a) Honeywell shall provide notice, updated annually, to New Jersey One Call and any other underground alert hotlines existing in New Jersey now or in the future, identifying the location and type of contamination at or near pipelines under Site 153 North;

(b) In the event of any planned or emergency disturbance of the Chromium Remedy at Site 153 North, Honeywell and any party creating such disturbance shall provide notice to the Parties and any utility holding an easement on Site 153 North of any actions undertaken or planned and the safety measures implemented to protect individuals near Site 153 North from exposure;

(c) In the event of any planned or emergency disturbance of the Chromium Remedy in the Commercial AOC, Honeywell, NJCU and any party creating such disturbance shall provide notice to the Parties and any owner or tenant of the NJCU Commercial AOC of any actions undertaken or planned and the safety measures implemented to protect individuals near the Commercial AOC from exposure;

(d) Honeywell shall annually update summary notice of the Chromium Remedies that is made available on any website developed by Honeywell to inform the public of contamination at Study Area 6 North, Study Area 6 South, and any future website related, in whole or in part, to Study Area 5. Such notice shall include a description of the remedial actions undertaken and the contamination remaining at the Commercial AOC. Once the long-term monitoring requirements set forth in paragraph 99 become effective, such annual update shall occur upon completion of the annual long-term monitoring required by paragraph 99; and

(e) NJCU shall provide Honeywell with a list of tenants in any development on the NJCU Commercial AOC and Honeywell shall provide annual written notice to the tenants of any long-term monitoring or maintenance activities undertaken with respect to the Chromium Remedy.

105. **Coordination of Construction Responsibilities.** NJCU shall construct, repair, and maintain any buildings in the NJCU Commercial AOC in such a way as to minimize disruption to the Chromium Remedy and shall cooperate with Honeywell in the coordination of any such construction with Honeywell's repair or replacement of components of the Chromium Remedy.

ARTICLE IV: OVERSIGHT AND ENFORCEMENT

106. **Federal Court Jurisdiction.** The Court shall retain jurisdiction over the Parties for the purpose of overseeing and enforcing this Consent Decree.

107. **Master Schedule.** Within 120 days of entry of this Consent Decree, Honeywell shall submit a revised and updated Master Schedule to NJDEP. The Parties recognize that implementation of the Chromium Remedy must be coordinated with the NJCU Redevelopment Plan and the NJCU Development Plan. The Parties currently anticipate that the Construction Phase will be completed on or before approximately December 31, 2011, and any Master Schedule which reflects this completion date shall be approved by the Parties. However, the Parties recognize that implementation of the Construction Phase must be coordinated with NJCU's implementation of the Historic Fill Remedy and preparation of the NJCU Property for redevelopment. Accordingly, Honeywell may reasonably adjust dates on the Master Schedule without further leave of Court or approval of the Parties provided that the implementation of the Construction Phase is complete by December 31, 2013. The Master Schedule for the implementation of the Construction Phase shall be approved by NJCU and Riverkeeper and approval shall not be unreasonably withheld. With leave of Court or consent of the Parties, the completion date for the Construction Phase can be extended beyond December 31, 2013, with just cause.

108. **NJDEP Oversight of the Chromium Remedy.**

(a) **NJDEP Authority.** NJDEP shall retain its full statutory and regulatory authority with respect to the Site, including: (i) permitting authority; (ii) authority to review and approve all remedial documents pertaining to the Chromium Remedy, including the documents listed in paragraph 108(b); and (iii) authority to issue an Unrestricted Use No Further Action Determination or similar approval.

(b) **Submission of Documents by Honeywell.** The following documents shall be Subject to Review and Comment by the Non-Honeywell Parties with an Interest. Honeywell shall allow the Non-Honeywell Parties with an Interest a period of 60 days for review, comment, and approval of the documents listed in this paragraph. None of the Non-Honeywell Parties with an Interest shall unreasonably withhold approval of any document. Upon approval by the Parties, Honeywell shall submit each of the documents set forth in this paragraph to NJDEP. In the event that a Party does not approve a document set forth in this paragraph within the approval period, the approval period may be extended upon mutual agreement of the Parties. If the approval period is not extended, Honeywell may submit the document to NJDEP, with an express statement that the Party has not approved the document and Riverkeeper, NJCU, and/or BMUA shall have the right to submit comments to NJDEP. Consistent with its statutory and regulatory authority, NJDEP may accept or reject comments, accept or reject the Parties' resolution of any comments, and approve or reject the documents described in this paragraph. The documents subject to this paragraph are:

(i) An overall schedule with milestones for the design and implementation of the remedy ("Master Schedule");

(ii) The Final 100% Design of the Chromium Remedy;

(iii) The Site-wide master health and safety plan, including a plan for training workers at the Commercial AOC;

(iv) A beneficial soil reuse plan pursuant to paragraph 69;

(v) The Long-Term Monitoring Plan;

(vi) A long-term plan for the inspection, monitoring, maintenance, and repair of the hydraulic controls identified in paragraph 86;

(vii) The final Remedial Action Report or final construction report (including as-built drawings and such other reports as may be prepared of the remedy as implemented);

(viii) A report reviewing measured shallow groundwater levels for the groundwater remedy;

(ix) A plan for removal and disposal of COPR or chromium-contaminated soils in the event of sewer repairs or replacement or roadway or utility repair or replacement at the Commercial AOC pursuant to paragraph 82;

(x) Post-implementation monitoring reports as required by the Long-Term Monitoring Plan;

(xi) A manual setting forth the procedures and protections that BMUA and/or NJCU shall employ when conducting utility repair, maintenance, or other invasive work in the Commercial AOC; and

(xii) Plans for further remediation of the NJCU Commercial AOC pursuant to paragraph 77.

(c) **Future Appointment of Special Master.** In the event that a Party seeks appointment of a Special Master pursuant to paragraph 110 and the Court appoints a Special Master, the provisions of subparagraph (b) shall be of no further force or effect as to the matters for which the Special Master has been appointed and the provisions of the Order appointing the

Special Master shall govern the procedures for the approval of documents Honeywell is required to submit pursuant to this Consent Decree.

109. **Appointment of a Special Master.** The Court hereby appoints a Special Master pursuant to Rule 53 of the Federal Rules of Civil Procedure for the purposes of overseeing financial assurances under this Consent Decree. The Special Master shall have jurisdiction over all matters for which he is appointed.

110. **Right to Seek Appointment of Special Master for Additional Matters.** The Parties dispute the need for a Special Master to oversee implementation of matters other than financial assurances under this Consent Decree. Therefore any Party has the right to seek appointment of a Special Master to oversee the implementation of this Consent Decree, in whole or in part, including referral of supervision of this Consent Decree to the Special Master who has been appointed to oversee implementation of the Study Area 6 North and Study Area 6 South Consent Decrees, and all other Parties reserve the right to oppose any such appointment or to seek limitations on the powers or authority of any Special Master appointed. No Party shall seek appointment of a Special Master until such time as it or another Party seeks resolution by the Court of a matter under this Consent Decree. As to any matter for which no Special Master has been appointed, Honeywell and NJCU shall undertake the obligations assigned to them in this Consent Decree without further order of the Court and Riverkeeper shall retain the right to enforce this Consent Decree through any means permitted under federal law, including an initial motion or successive motions for appointment of a Special Master.

111. **Retention of Professionals.** The Special Master may retain the services of professionals and/or other technical personnel, as reasonably needed, to fulfill his obligations under this Consent Decree, and for which he will be reimbursed pursuant to paragraph 113.

112. **Insurance for the Special Master.** The Special Master shall obtain insurance coverage relating to the performance of the Special Master's duties and responsibilities under this Consent Decree. Such coverage shall be similar to the Special Master's existing coverage in *ICO v. Honeywell*, procured pursuant to the Court's November 11, 2005 Stipulation and Order Regarding Special Master's Application to Procure Insurance Coverage, and as extended to the Consolidated Litigation by the Sediment Consent Order. The insurance coverage shall be sufficiently extended in duration and scope to cover all additional duties and responsibilities as set forth hereunder. Honeywell shall pay the premiums and other administrative costs of the Special Master's insurance.

113. **Reimbursement of Special Master Fees and Expenses.** The Special Master shall submit fee applications to the Court for approval of reasonable fees and expenses incurred in the oversight of matters referred to him pursuant to this Consent Decree. Any Party may raise with the Court objections to such fee applications. Upon approval of a fee application by the Court, the reimbursement of the Special Master's fees and expenses shall be made from the escrow fund previously established by Honeywell for the purpose of paying the Special Master's fees and expenses in *ICO v. Honeywell* pursuant to this Court's September 15, 2003 Order Setting Financial Assurances and extended to the Consolidated Litigation by the Sediment Consent Order. If necessary, the Special Master's fees and expenses shall also be covered pursuant to paragraph 11 of the Global Financial Assurances Order.

114. **Expiration of Special Master's Appointment.** The Special Master's appointment under this Consent Decree to oversee financial assurances, unless modified by future order of the Court pursuant to an application under paragraph 110, shall expire after Honeywell has established its initial and long-term financial assurances under this Consent Decree. However, solely to the extent that the Special Master is still supervising other portions

of the Consolidated Litigation or *ICO v. Honeywell*, after Honeywell's establishment of financial assurances, the Special Master shall continue to have jurisdiction to oversee such financial assurances under this Consent Decree until he has completed his specifically enumerated responsibilities under the Final Judgment in *ICO v. Honeywell*, the Prior Settlements, and any other future orders, decrees, or judgments in *ICO v. Honeywell* and the Consolidated Litigation. Enumerated responsibilities under any order, decree, or judgment shall include only those tasks specifically assigned to the Special Master in the order, decree, or judgment. Enumerated responsibilities shall not include any continued jurisdiction exercised over long-term monitoring beyond the initial period specified in the order, decree, or judgment. For example, the Special Master has jurisdiction over the first five years of long-term monitoring under the Sediment Consent Order. Oversight during these five years shall be an enumerated responsibility, but any continued oversight of long-term monitoring, pursuant to the extension of the Special Master's jurisdiction beyond the first five years, as provided in paragraph 60 of the Sediment Consent Order, shall not be an enumerated responsibility. Such extensions of jurisdiction shall be effective only so long as specific enumerated responsibilities in any order, decree, or judgment have not been fulfilled

ARTICLE V: FINANCIAL ASSURANCES

A. Initial Financial Assurances

115. **Chromium Remedy Letter of Credit.** Honeywell shall obtain a one-year, irrevocable letter of credit (the "Chromium Remedy Letter of Credit") to be automatically renewed annually in an amount equal to the "Remedial Costs Subject to Financial Assurance."

(a) Remedial Costs Subject to Financial Assurance shall mean:

(i) The costs of implementing the Chromium Remedy as set forth in paragraphs 72 through 86, except those activities set forth in paragraphs 73, 76, 77, and 82;

(ii) The costs of monitoring and maintenance activities for five years, as required by the Long-Term Monitoring Plan; and

(iii) A contingency of 25% with respect to those costs listed in subparagraphs (i) and (ii).

(b) The Chromium Remedy Letter of Credit shall be issued by a financial institution domiciled in the United States or by a United States subsidiary of a non-U.S. financial institution, provided that in either case, the financial institution shall be acceptable to the Special Master.

116. **Procedures for Review of the Proposed Chromium Remedy Letter of Credit.** No later than June 1, 2010, Honeywell shall submit to Riverkeeper and NJCU for their review the proposed (a) amount of the Chromium Remedy Letter of Credit; (b) form of the Chromium Remedy Letter of Credit; and (c) name of the institution that will issue the Chromium Remedy Letter of Credit. If either Riverkeeper or NJCU does not agree to the terms of the Chromium Remedy Letter of Credit, the Parties shall meet and confer in an effort to resolve their differences. If the Parties are unable to reach agreement over the terms of the Chromium Remedy Letter of Credit, the Parties shall submit the dispute to the Special Master, who shall recommend a resolution of the dispute. Any Party shall have the right to seek review by the Court of the Special Master's recommendation regarding the terms of the Chromium Remedy Letter of Credit. The Parties agree that Honeywell may satisfy this obligation through the Citibank Letter of Credit as defined by the Global Financial Assurances Order. They further agree that the provisions of paragraphs 2 and 3 of the Global Financial Assurances Order, in so far as they provide for the deferral of a present value calculation until the occurrence of specified events, apply to the establishment of the initial financial assurances under this Consent Decree without the need to satisfy paragraph 3(b) of the Global Financial Assurances Order. In the

event that Honeywell decides to satisfy its obligation for the Chromium Remedy Letter of Credit through means other than the Citibank Letter of Credit, the Parties agree to defer a present value calculation for the costs set forth in paragraph 115(a) until such time as Honeywell seeks a reduction in the amount of the Chromium Remedy Letter of Credit pursuant to paragraph 118. At that time, the Parties shall: (i) agree on an inflation rate and discount rate and adjust the cost estimates accordingly; or (ii) in the absence of agreement on an inflation rate and discount rate, agree to continue to use unadjusted cost estimates until Honeywell seeks another adjustment pursuant to paragraph 118; or (iii) in the absence of any agreement, make the inflation rate and discount rate issues Subject to Comment by Riverkeeper and NJCU and Approval by the Special Master.

117. **Automatic Renewal.** The Chromium Remedy Letter of Credit shall be automatically renewed annually unless (a) no later than 120 days prior to the anniversary of the Chromium Remedy Letter of Credit issue date, the issuer provides notice of nonrenewal or (b) Honeywell seeks a reduction in the Chromium Remedy Letter of Credit, pursuant to paragraph 118, to correspond to the reduced estimate of Remedial Costs Subject to Financial Assurances. If the issuer provides notice of nonrenewal, Honeywell shall obtain a replacement one-year irrevocable Chromium Remedy Letter of Credit at least 95 days prior to the expiration date of the existing Chromium Remedy Letter of Credit. If Honeywell is not otherwise in default as provided in Article V, the Special Master shall direct the cancellation of the prior Chromium Remedy Letter of Credit within 91 days after delivery to the Special Master of any replacement of a Chromium Remedy Letter of Credit. In the event that the Special Master is entitled to draw upon a Chromium Remedy Letter of Credit and there are two Chromium Remedy Letters of Credit currently in place, the Special Master shall not draw an aggregate amount in excess of the highest valued Chromium Remedy Letter of Credit. Upon Honeywell's request, the Special

Master may, at his option, decide not to require overlapping letters of credit in any year based on Honeywell's financial strength in that year, provided that Honeywell has submitted all necessary information so that the Special Master can make his determination at least 150 days prior to the expiration of the Chromium Remedy Letter of Credit.

118. **Annual Right to Seek Reduction in Amount of Chromium Remedy Letter of Credit.** Honeywell shall have the right annually to seek a reduction in the Chromium Remedy Letter of Credit. At the time of seeking such reduction, Honeywell shall submit to the Riverkeeper, NJCU and the Special Master an estimate of the remaining Remedial Costs Subject to Financial Assurance, including the contingency as described in paragraph 115(a)(iii), and shall seek adjustment of the Chromium Remedy Letter of Credit so that the total estimated amount of remaining Remedial Costs Subject to Financial Assurance are covered by the Chromium Remedy Letter of Credit. However, the adjustment shall not result in reducing the Chromium Remedy Letter of Credit to an amount below the remaining estimated costs under paragraphs 115(a)(i) and 115(a)(ii), plus a contingency of 25% of the remaining estimated costs under paragraphs 115(a)(i) and 115(a)(ii), and shall not result in reducing the Chromium Remedy Letter of Credit to an amount less than $8,000,000 as expressed in 2010 dollars unless long-term financial assurances are in place pursuant to Article V.B. Before making any request to reduce the amount or modify the terms of the Chromium Remedy Letter of Credit, Honeywell shall first confer with the Riverkeeper and NJCU in an effort to reach agreement on the modified amount or terms of the Chromium Remedy Letter of Credit. If the Parties are unable to reach agreement over the modified amount or terms of the Chromium Remedy Letter of Credit, the Parties shall submit the dispute to the Special Master, who shall resolve the dispute. Any Party shall have the right to seek review by the Court of the Special Master's decision regarding the modified amount or terms of the Chromium Remedy Letter of Credit. Upon agreement on the amount of the

reduction or modified terms of the Chromium Remedy Letter of Credit (or upon order of the Court directing that the Chromium Remedy Letter of Credit be reduced to an identified amount or otherwise modified), Honeywell shall obtain a replacement Chromium Remedy Letter of Credit in such amount and with such terms. If Honeywell is not otherwise in default as provided in Article V and the issuer of the primary Chromium Remedy Letter of Credit has not provided notice of non-renewal, within 30 days after delivery to the Special Master of any replacement of a Chromium Remedy Letter of Credit, the Special Master shall direct the cancellation of the prior Chromium Remedy Letter of Credit. Honeywell's right to seek a reduction under this paragraph shall also be subject to paragraph 3 of the Global Financial Assurances Order in the event that Honeywell seeks to satisfy its initial financial assurance obligation under this Consent Decree through the Citibank Letter of Credit.

119. **Bankruptcy Protection.** Neither the Chromium Remedy Letter of Credit nor the proceeds of the Chromium Remedy Letter of Credit shall be considered the property of Honeywell or property of the estate in the event of Honeywell's bankruptcy. The Chromium Remedy Letter of Credit shall contain the language necessary to assure that neither the Chromium Remedy Letter of Credit nor the proceeds of the Chromium Remedy Letter of Credit shall be affected or restricted in any way by operation of the automatic stay in 11 U.S.C. § 362.

120. **Exclusive Court Jurisdiction.** The Chromium Remedy Letter of Credit shall recite that the issuer submits to the exclusive jurisdiction of this Court for any and all disputes arising under the Letter of Credit.

121. **Application of New York Law.** The then-current provisions of the Uniform Customs and Practice ("UCP") for Documentary Credits as published by the International Chamber of Commerce or such successor organization and New York law shall apply to the

Chromium Remedy Letter of Credit at the time that Honeywell obtains such letter of credit or any replacements thereafter.

122. **Procedures upon Honeywell's Material Default of Its Obligations**. During the period in which the Special Master has jurisdiction pursuant to paragraphs 109 and 114, the Chromium Remedy Letter of Credit shall be payable to the Special Master and shall not, prior to its expiration date, be revoked or terminated except consistent with this Consent Decree and with the consent of the Special Master and approval by the Court. After the expiration of the Special Master's jurisdiction under paragraph 114, the Chromium Remedy Letter of Credit shall be payable to the Court and shall not, prior to its expiration date, be revoked or terminated except consistent with this Consent Decree and with the approval of the Court. The Special Master's or the Court's ability to draw upon the Chromium Remedy Letter of Credit shall not be limited by any agreement between Honeywell and the issuer. The Special Master may, without further order or notice to this Court, draw upon the Chromium Remedy Letter of Credit upon the occurrence of default by Honeywell, which shall include:

(a) The failure of Honeywell, in the event that notice is given pursuant to paragraph 117 to deliver a replacement Chromium Remedy Letter of Credit at least 95 days prior to the expiration date of the existing Chromium Remedy Letter of Credit;

(b) The material failure of Honeywell to proceed with diligence and in good faith to carry out the terms of this Consent Decree and the continuance of such a material breach for a period of 15 days after written notice to Honeywell thereof and (i) Honeywell, in the opinion of the Special Master without further input from the Parties, shall have failed to cure the breach; (ii) during the 15-day period, the Court has not entered an order to prevent the Special Master from drawing on the Chromium Remedy Letter of Credit; or (iii) the Court or the Special Master has not granted Honeywell additional time to cure the breach;

(c) The filing by Honeywell of a petition seeking relief, or the granting of relief, under the Federal Bankruptcy Code or any similar federal or state statute; any assignment for the benefit of creditors made by Honeywell; the involuntary filing of any of the foregoing against Honeywell if involuntary filing has not been dismissed within 60 days; the appointment of a custodian, receiver, liquidator, or trustee, or other similar official for Honeywell or for a substantial part of Honeywell's property; any action by Honeywell to effect any of the foregoing, or if Honeywell becomes insolvent as defined in Section 101(32) of the Federal Bankruptcy Code; or

(d) The dissolution, liquidation, merger, consolidation, or reorganization of Honeywell or the institution of any proceeding to effect any of the foregoing, other than under subparagraph (c), and the failure of Honeywell to provide assurance to the Special Master, within 15 days after written notice from the Special Master, that such an event will not impair Honeywell's ability to carry out the terms of this Consent Decree.

123. **Placement of Proceeds in Trust Account.** In the event that the Special Master or the Court draws upon the Chromium Remedy Letter of Credit due to an event of default, the Special Master or the Court shall hold the proceeds of the Chromium Remedy Letter of Credit which represent the remaining estimated Chromium Remedy costs under paragraphs 115(a)(i) and115(a)(ii), plus a contingency of 25% of the remaining estimated costs under paragraphs 115(a)(i) and 115(a)(ii), in a trust account and shall manage such account as necessary to ensure the availability of the necessary funds at the time such funds are needed to pay for the remediation activities. The Special Master shall not expend the proceeds of the Chromium Remedy Letter of Credit or the trust account without further order of the Court. The Special Master or the Court shall place all additional proceeds of the Chromium Remedy Letter of Credit in a separate trust fund pursuant to paragraph 128(b)(v).

124. **Use of the Proceeds in Event of Default.** If Honeywell has satisfied its obligation for initial financial assurances through the Citibank Letter of Credit, in the event of a default by Honeywell, the use of the proceeds from the Citibank Letter of Credit shall be governed by paragraph 7 of the Global Financial Assurances Order. In event of such default prior to the completion of the activities under paragraph 74 for the Commercial AOC, NJCU and/or Riverkeeper may request that the Court order use of the proceeds from the Chromium Remedy Letter of Credit to accomplish remediation of the NJCU Commercial AOC to Unrestricted Use rather than completion of the activities under paragraph 74.

125. **Termination of Chromium Remedy Letter of Credit.** The Chromium Remedy Letter of Credit may be withdrawn in its entirety upon the satisfaction of all of the following:

(a) The implementation of paragraphs 72, 74, 75, 78, and 86 of the Chromium Remedy; and

(b) Establishment of long-term financial assurance pursuant to Article V.B.

B. Long-Term Financial Assurances

126. **Long-Term Financial Assurances.** Honeywell shall fund long-term financial assurances as set forth herein to ensure that the activities set forth in paragraph 127(a) are carried out regardless of whether Honeywell is financially able to carry out such activities in perpetuity.

127. **Costs Subject to Long-Term Financial Assurances.**

(a) Long-term financial assurances shall provide enough funds to cover the costs of the following activities:

(i) Perpetual monitoring and maintenance of the Chromium Remedy;

(ii) Perpetual operation of the shallow groundwater remedies pursuant to paragraph 86;

(iii) Perpetual repair of the cap;

(iv) Anticipated costs of coordinating the cap repair and replacement with the construction of a commercial building in Lot 7 pursuant to paragraph 76;

(v) Perpetual replacement of the cap on a 75-year replacement interval (such costs shall not include building demolition or replacement); and

(vi) The perpetual administration of the trust fund regardless of whether such trust fund is selected by Honeywell pursuant to paragraph 128(a) or is established from the Long-Term Letter of Credit pursuant to paragraphs 128(b)(ii), 128(b)(v), or 134.

(b) The costs that shall be subject to financial assurances are an amount that will provide the full payment for each of the activities set forth in paragraphs 127(a)(i) through 127(a)(vi), plus a 25% contingency, when the activities in paragraphs 127(a)(i) through 127 (a)(vi) are expected to be performed. The costs subject to financial assurances are forward-looking because they state an amount valued at the time the funds are needed. As such, they shall be stated in contemporary time as the present value (calculated on the basis of a nominal discount rate of 4.75% and an inflation rate of 2.5% (subject to possible future adjustments pursuant to paragraph 131) of the estimated future costs of the activities specified in paragraphs 127(a)(i) through 127(a)(vi), plus a 25% contingency.

128. **Long-Term Financial Assurance Mechanisms.** Honeywell shall provide long-term financial assurances in the amount of the costs subject to long-term financial assurances in the form of a trust fund, a letter of credit, or some combination of the two. The selected mechanism(s) shall satisfy the following requirements:

(a) **Trust Fund.** In the event that Honeywell selects a trust fund, Honeywell shall create a trust fund such that it can provide the full amount of the costs subject to long-term financial assurances, as set forth in paragraph 127(b), at the time those funds are necessary.

(i) The trust fund shall be at arm's length from Honeywell and shall not be considered the property of Honeywell or property of the estate in the event of Honeywell's bankruptcy, dissolution, privatization, or sale. The trust fund agreement shall contain the language necessary to assure that neither the trust fund nor the earnings of the trust fund shall be affected or restricted in any way by operation of the automatic stay in 11 U.S.C. § 362.

(ii) The trust fund shall be managed by a financial institution domiciled in the United States or by a United States subsidiary of a non-U.S. financial institution acceptable to NJCU and Riverkeeper or approved by the Court. In the event that the financial institution managing the trust fund declares bankruptcy, the Court shall withdraw the funds and appoint another financial institution meeting the requirements of this paragraph to manage the trust.

(iii) No more frequently than once per year, Honeywell may apply to the Court for an order directing the trust manager to reimburse Honeywell for any costs that it has incurred to carry out the activities set forth in paragraphs 127(a)(i) through 127(a)(v).

(b) **Long-Term Letter of Credit.** In the event that Honeywell selects a letter of credit, Honeywell shall obtain a one-year irrevocable letter of credit (the "Long-Term Letter of Credit") to be automatically renewed annually in an amount that provides sufficient funds such that a trust fund, separate from any trust fund created under paragraph 128(a) but satisfying the requirements of paragraph 128(a), could be created. The Long-Term Letter of Credit-funded trust, plus any trust fund established under paragraph 128(a), shall provide the full amount of the costs subject to long-term financial assurances, as set forth in paragraph 127(b), at the time those funds are necessary. The amount of any Long-Term Letter of Credit shall therefore be adjusted periodically as the cap replacement interval is approached because, for example, the money

needed in the 10th year to fund a trust that can provide for replacement of the cap in the 75th year is much less than the money that would be needed in the 40th year. Such periodic adjustments shall be proposed and approved by the Court in conjunction with the adjustments under paragraph 131.

(i) Neither the Long-Term Letter of Credit nor the proceeds of the Long-Term Letter of Credit shall be considered the property of Honeywell or property of the estate in the event of Honeywell's bankruptcy, dissolution, privatization, or sale. The Long-Term Letter of Credit shall contain the language necessary to assure that neither the Long-Term Letter of Credit nor the proceeds of the Long-Term Letter of Credit shall be affected or restricted in any way by operation of the automatic stay in 11 U.S.C. § 362.

(ii) The Long-Term Letter of Credit shall be issued by a financial institution domiciled in the United States or by a United States subsidiary of a non-U.S. financial institution acceptable to Riverkeeper and NJCU or approved by the Court. In the event that the financial institution issuing the Long-Term Letter of Credit declares bankruptcy, the Court shall authorize the drawing of funds from the Long-Term Letter of Credit and shall deposit those funds in a trust fund, separate from any trust fund created under paragraph 128(a) but satisfying the requirements of paragraph 128(a).

(iii) The then-current provisions of the Uniform Customs and Practice ("UCP") for Documentary Credits as published by the International Chamber of Commerce or such successor organization and New York law shall apply to the Long-Term Letter of Credit at the time that Honeywell obtains such letter of credit or any replacements thereafter.

(iv) The Long-Term Letter of Credit shall be automatically renewed annually, unless, no later than 120 days prior to the anniversary of the Long-Term Letter of Credit issue date, the issuer provides notice of non-renewal. If the issuer provides notice of non-

renewal, Honeywell shall obtain a replacement irrevocable Long-Term Letter of Credit at least 95 days prior to the expiration date of the existing Long-Term Letter of Credit. If Honeywell is not otherwise in default as provided in this Article, the Court shall direct the cancellation of the prior Long-Term Letter of Credit within 91 days after delivery to the Court of any replacement of a Long-Term Letter of Credit. In the event that the Court is entitled to draw upon a Long-Term Letter of Credit when there are two Letters of Credit currently in place, the Court shall not draw an aggregate amount in excess of the highest valued Long-Term Letter of Credit.

(v) Prior to the expiration of the Special Master's appointment pursuant to paragraph 114, the Long-Term Letter of Credit shall be payable to the Special Master. During the time the Long-Term Letter of Credit is payable to the Special Master, the Special Master may draw on the Long-Term Letter of Credit as provided in paragraph 122. In the event that the Special Master draws upon the Long-Term Letter of Credit due to an event of default, the Special Master shall place the proceeds of the Long-Term Letter of Credit in a trust fund, separate from any trust fund created under paragraph 128(a) but satisfying the requirements of paragraph 128(a). After the Special Master's appointment expires pursuant to paragraph 114, the Long-Term Letter of Credit shall be payable to the Court and, in the event that the Court draws on the Long-Term Letter of Credit, the Court shall place the proceeds of the Long-Term Letter of Credit in a trust fund, separate from any trust fund created under paragraph 128(a) but satisfying the requirements of paragraph 128(a).

(vi) Whether the Long-Term Letter of Credit is payable to the Special Master or the Court, it shall not, prior to its expiration date, be revoked or terminated by Honeywell except consistent with this Consent Decree and with the approval of the Court. The ability of the Special Master or the Court to draw upon the Long-Term Letter of Credit shall not be limited by any agreement between Honeywell and the issuer.

(vii) In the event that the Long-Term Letter of Credit is drawn upon and invested pursuant to paragraph 128(b)(ii), 128(b)(v), or 134 and Honeywell has also selected a trust fund pursuant to paragraph 128(a), resulting in the existence of two trust funds, the two trust funds shall be managed so as to ensure that the combined amount of the trust funds is sufficient to provide the full amount of the costs subject to long-term financial assurances, as set forth in paragraph 127(b), at the time those funds are necessary.

(c) **Combination.** Honeywell may use a combination of a trust fund and a letter of credit to achieve the requirements of this paragraph. However, if a combination is used, Honeywell shall ensure that the combined amount of financial assurances is sufficient to provide the full amount of the costs subject to long-term financial assurances, as set forth in paragraph 127(b), at the time those funds are necessary. The trust fund and the letter of credit shall otherwise satisfy all the requirements of paragraphs 128(a) and 128(b).

129. **Procedures for Review of the Proposed Long-Term Financial Assurances.** No later than December 31, 2010, Honeywell shall submit to Riverkeeper, NJCU, and the Special Master, for their review (a) the amount of the proposed long-term financial assurances; (b) the form(s) of the proposed long-term financial assurance mechanisms; and (c) the name(s) of the institution proposed to manage or issue the long-term financial assurances. If Riverkeeper and NJCU agree to the terms of the proposed long-term financial assurances, within 60 days of such agreement, Honeywell shall create a trust fund and/or secure a Long-Term Letter of Credit on those terms. If the Parties are unable to reach agreement over the terms of the long-term financial assurances, the Parties shall submit the dispute to the Special Master, who shall recommend a resolution of the dispute. Any Party shall have the right to seek review by the Court of the Special Master's recommendation regarding the terms of the financial assurances.

130. **Temporary Maintenance of Chromium Remedy Letter of Credit.** Until the long-term financial assurances have been put into place, Honeywell shall maintain the Chromium Remedy Letter of Credit required by paragraph 115 in an amount equal to at least $8,000,000 in 2010 dollars. In the event of any default by Honeywell pursuant to paragraph 122 while the Chromium Remedy Letter of Credit is in place, the provisions of paragraph 128(b)(v) for the placement of the proceeds that exceed the remaining estimated Chromium Remedy costs under paragraph 115(a)(i) and 115(a)(ii), plus a contingency of 25% of the remaining estimated costs under paragraphs 115(a)(i) and 115(a)(ii), shall apply.

131. **Adjustment of Amount Held in Long-Term Financial Assurances.** Every five years as marked from the establishment of the first long-term financial assurances pursuant to paragraph 128, the Parties shall report to the Court whether the long-term financial assurances are adequately funded to provide the full amount of the costs subject to long-term financial assurances, as set forth in paragraph 127(b), at the time those funds are necessary. At such time as the Parties report to the Court, any Party may seek an adjustment in the amount of the long-term financial assurances, including an adjustment in the discount rate and/or inflation rates used to calculate the long-term financial assurances. The Party seeking an adjustment must demonstrate that the long-term financial assurances are under-funded or over-funded to provide the full amount of the costs subject to long-term financial assurances, as set forth in paragraph 127(b), at the time those funds are necessary. Such demonstration shall reflect the actual costs of implementing the remedy and/or any replacement of the remedy, once such actual costs are available. The demonstration shall also reflect the costs of work completed to date and the actual lifetime of the cap, once the cap has been replaced or has passed a replacement interval without requiring replacement. The demonstration shall further reflect the actual performance of the fund and its ability to provide the full amount of the costs subject to long-term financial

assurances, as set forth in paragraph 127(b), at the time those funds are necessary. Any demonstration shall be forward-looking and shall be based upon estimates of what the activities in paragraphs 127(a)(i) through 127(a)(vi) are expected to cost at the time they must be performed and the amount of funding projected to be available to undertake such activities at the time they must be performed. If, after reviewing the submission(s) received from the Parties, the Court determines that the long-term financial assurances are under-funded or over-funded to provide the full amount of the costs subject to long-term financial assurances, as set forth in paragraph 127(b), at the time those funds are necessary, the Court shall order an adjustment in the amount held in the long-term financial assurances to overcome the shortage or overage. In the event that the Court determines that the long-term financial assurances are under-funded, it shall order Honeywell to increase the amount held in the long-term financial assurances. In the event that the Court determines that any trust fund established pursuant to paragraph 128(a) is over-funded, the Court shall issue an order directing the trust manager to pay the overage to Honeywell. In the event that the Court determines that the Long-Term Letter of Credit is over-funded, the Court shall issue an order permitting Honeywell to reduce the amount covered during the next annual renewal of the Long-Term Letter of Credit pursuant to paragraph 128(b)(iv). Any adjustment to the amount of the Long-Term Letter of Credit pursuant to this paragraph shall be in addition to any adjustment of the amount of the Long-Term Letter of Credit required pursuant to paragraph 128(b).

132. **Exclusive Court Jurisdiction.** The trust fund agreement and/or the Long-Term Letter of Credit shall recite that the trust fund manager and/or issuer of the Long-Term Letter of Credit submit to the exclusive jurisdiction of this Court for any and all disputes arising under the trust fund or the Long-Term Letter of Credit. The requirements of this paragraph shall apply whether the trust fund is established pursuant to paragraph 128(a), 128(b)(ii), 128(b)(v), or 134.

133. **Procedures upon Honeywell's Material Default of Its Obligations after the Special Master's Appointment Has Expired.** Upon the occurrence of default by Honeywell, after the Special Master's appointment has expired, Riverkeeper or NJCU may move the Court on an expedited basis for an order to withdraw funds from the trust fund or to draw on the Long-Term Letter of Credit. Default shall include:

(a) The failure of Honeywell, in the event that notice is given pursuant to paragraph 128(b)(iv) to deliver a replacement Long-Term Letter of Credit at least 95 days prior to the expiration date of the existing Long-Term Letter of Credit;

(b) The material failure of Honeywell to proceed with diligence and in good faith to carry out the terms of this Consent Decree and the continuance of such a material breach for a period of 30 days after written notice by Riverkeeper or NJCU to Honeywell of the alleged material failure, unless Honeywell cures the alleged breach within the 30-day notice period or such longer period as the Parties may agree to or the Court may order;

(c) The filing by Honeywell of a petition seeking relief, or the granting of relief, under the Federal Bankruptcy Code or any similar federal or state statute; any assignment for the benefit of creditors made by Honeywell; the involuntary filing of any of the foregoing against Honeywell if the involuntary filing is not dismissed within 60 days; the appointment of a custodian, receiver, liquidator, trustee, or other similar official for Honeywell or for a substantial part of Honeywell's property; any action by Honeywell to effect any of the foregoing; or Honeywell becomes insolvent as defined in Section 101(32) of the Federal Bankruptcy Code; or

(d) The dissolution or liquidation of Honeywell or the institution of any proceeding to effect any of the foregoing, other than under subparagraph (c), if Honeywell fails to provide assurance to Riverkeeper, NJCU, and the Court, within 15 days after written notice

from one or more of the Parties, that such an event will not impair Honeywell's ability to carry out the terms of this Consent Decree.

134. **Drawing on the Long-Term Letter of Credit in the Event of Honeywell's Default.** If the Court grants any motion by Riverkeeper or NJCU pursuant to paragraph 133 to draw on the Long-Term Letter of Credit, the sum approved by the Court's order granting the motion shall be paid from the Long-Term Letter of Credit into a trust fund, separate from any trust fund created under paragraph 128(a) but satisfying the requirements of paragraph 128(a). If Honeywell has satisfied its obligation for long-term financial assurances through the Citibank Letter of Credit, in the event of a default by Honeywell, the use of the proceeds from the Citibank Letter of Credit shall be governed by paragraph 7 of the Global Financial Assurances Order.

135. **Use of the Trust Fund in the Event of Honeywell's Default.** In the event of Honeywell's default, as defined in paragraphs 133(a) through 133(d), the money in the trust fund established pursuant to paragraph 128(a) shall be available to meet the obligations of paragraph 77 or paragraph 127(a), as well as for payment of future attorneys' fees and expenses pursuant to paragraph 150. Riverkeeper or NJCU shall file motions with the Court seeking orders directing how the money in the trust fund shall be used. The Court shall consider motions on an expedited basis and shall enter appropriate orders. The Court may enter an order allowing for automatic withdrawal of regular expenses without separate motion to the Court by Riverkeeper or NJCU.

136. **Use of a Trust Fund Established Pursuant to Paragraph 123, 128(b)(ii), 128(b)(v), or 134.** In the event that a trust fund is established pursuant to paragraph 123, 128(b)(ii), 128(b)(v), or 134, the money in the trust fund shall be available to meet the obligations of paragraph 77 or 127(a), as well as for the payment of future attorneys' fees and expenses pursuant to paragraph 150. Riverkeeper or NJCU shall file motions with the Court

seeking orders directing how the money in the trust fund shall be used. The Court shall consider motions on an expedited basis and shall enter appropriate orders. The Court may enter an order allowing for automatic withdrawal of regular expenses without separate motion to the Court by Riverkeeper or NJCU.

137. **Use of Proceeds for Further Remediation.** NJCU, a future owner of the NJCU Commercial AOC, and/or Riverkeeper may request that the Court order use of the proceeds under paragraphs 135, 136, and 144 to accomplish remediation of the NJCU Commercial AOC to Unrestricted Use rather than for other activities.

138. **Termination of the Long-Term Financial Assurances.** Honeywell's obligations under Article V.B shall be terminated and the long-term financial assurance mechanisms shall be terminated when the Court finds that no hexavalent or total chromium contamination remains on the Site, whether in soils or in groundwater, in excess of the levels specified for Unrestricted Use in the NJDEP Chromium Directive or any more restrictive standards for Unrestricted Use in place at the time, whichever is more restrictive. Upon determining that long-term financial assurances may be terminated, the Court shall order that any Long-Term Letter of Credit may be withdrawn in its entirety and any trust fund may be terminated. In conjunction with its order terminating any trust fund, the Court in its discretion shall designate a recipient(s) of any remaining trust funds.

C. Financial Assurances for Future Remediation in the NJCU Commercial AOC

139. **Contingent Residential Conversion Financial Assurances.** Honeywell shall not be required to provide financial assurances to secure those remedial obligations set forth in paragraph 77 with respect to the NJCU Commercial AOC except as follows:

(a) If at any time during the period between January 1, 2025, and December 31, 2029, Honeywell's credit rating falls below BBB as provided in subparagraph (d), within 60

days of the date on which its credit rating falls below BBB, Honeywell shall provide financial assurances for the amount set forth in subparagraph (c), except that such amount shall be estimated in the dollars of the year in which the credit rating fell, and shall maintain those financial assurances until its obligation to provide Contingent Residential Conversion Financial Assurances terminates under paragraph 145.

(b) In the event that Honeywell is not required to provide financial assurances pursuant to subparagraph (a), Honeywell shall provide financial assurances under subparagraph (c) no later than January 1, 2030.

(c) Honeywell shall provide financial assurances under this paragraph in an amount equal to the costs, plus a 25% contingency, estimated in 2030 dollars or the year's dollars in which financial assurances are required under subparagraph (a), of the performance of Honeywell's remedial obligations set forth in paragraph 77. The Contingent Residential Conversion Financial Assurances shall be subject to the requirements of paragraphs 140 through 145.

(d) For purposes of this paragraph, a credit rating below BBB shall mean that the rating on Honeywell's long-term credit instruments has fallen below BBB on the Fitch or S&P scale or Baa2 on the Moody scale. If these scales are no longer in effect or have been modified, the appropriate trigger is an equivalent rating. If there are differing opinions among the agencies, the lowest rating will be the deciding rating.

140. **Vehicle for Contingent Residential Conversion Financial Assurances.** Honeywell shall provide Contingent Residential Conversion Financial Assurances by using any financial instrument or vehicle permitted pursuant to N.J. Stat. Ann. §13: 1E-68, and N.J. Admin. Code §§ 7:26c-7.12, as currently adopted and as they may be subsequently amended, modified, or replaced by any other provision of New Jersey law or regulation, except that:

(a) Honeywell shall not use a corporate self-guarantee or a line of credit as the financial instrument by which it provides Contingent Residential Conversion Financial Assurances;

(b) Neither the Contingent Residential Conversion Financial Assurances instrument nor any proceeds therefrom shall be considered the property of Honeywell or property of the estate in the event of Honeywell's bankruptcy or dissolution. The financial instrument shall contain the language necessary to assure that neither the financial instrument nor the proceeds therefrom shall be affected or restricted in any way by operation of the automatic stay in 11 U.S.C. § 362; and

(c) The Court shall be entitled to draw upon the financial assurance instrument in accordance with this Consent Decree.

141. **Procedures for Review of Honeywell's Contingent Residential Conversion Financial Assurances.** No later than 30 days prior to the date upon which Honeywell is obligated to provide financial assurances pursuant to paragraph 139, Honeywell shall notify NJCU and Riverkeeper, in writing, of (a) the amount of paragraph 139(c) remedial costs to be subject to financial assurances, (b) the form(s) of the proposed Contingent Residential Conversion Financial Assurances mechanisms, and (c) the name(s) of the financial institution proposed to manage or issue the Contingent Residential Conversion Financial Assurances. If either NJCU or Riverkeeper objects to the amount of, mechanism for, or institution providing the financial assurances, the objecting Party shall notify and consult with Honeywell and the other Party in an effort to resolve the matter. If the Parties agree on the Contingent Residential Conversion Financial Assurances prior to the date upon which Honeywell is to provide such financial assurances, Honeywell shall move the Court for an order establishing the Contingent Residential Conversion Financial Assurances in the agreed amount. If NJCU, Riverkeeper, and

Honeywell cannot reach agreement on the amount and financial instrument within 15 days prior to the date upon which Honeywell is obligated to provide financial assurances, any Party may move the Court for an expedited hearing on the matter. If the Court has not ruled on the matter by the date on which Honeywell is required to provide financial assurances pursuant to paragraph 139, Honeywell shall provide financial assurances in the amount it has proposed and using the financial mechanisms and institution it has proposed until such time as the Court rules on the dispute.

142. **Adjustments in Financial Assurances.**

(a) Every five years as marked from the establishment of the Contingent Residential Conversion Financial Assurances, the Parties shall report to the Court whether the Contingent Residential Conversion Financial Assurances are adequately funded to provide the full amount of the costs subject to the Contingent Residential Conversion Financial Assurances, as set forth in paragraph 139(c). At such time as the Parties report to the Court, Honeywell, NJCU, or Riverkeeper may seek an adjustment in the amount of, mechanism for, or institution providing the Contingent Residential Conversion Financial Assurances. If a Party seeks an adjustment in the amount of the financial assurances, it must demonstrate that the Contingent Residential Conversion Financial Assurances are under-funded or over-funded to provide the full amount of the costs subject to financial assurances, as set forth in paragraph 139(c) as of the day that the adjustment is sought. Such demonstration shall also reflect the actual performance of the financial assurance mechanism, and the requirements of New Jersey law pertaining to financial assurances in effect at the time. If, after reviewing the submissions received from the Parties, the Court determines that the Contingent Residential Conversion Financial Assurances are under-funded or over-funded to provide the full amount of the costs subject to Contingent Residential

Conversion Financial Assurances, the Court shall order an adjustment in the amount held in the Contingent Residential Conversion Financial Assurances to overcome the shortage or overage.

(b) From time to time, as the case may be, Honeywell may seek a change in the mechanism for, or institution providing, the Contingent Residential Conversion Financial Assurances. Prior to making such a change, Honeywell shall notify NJCU and Riverkeeper in writing and provide NJCU and Riverkeeper with 30 days to object to the change. If either NJCU or Riverkeeper objects, Honeywell may move the Court seeking such a change in either the mechanism for, or the institution providing, the Contingent Residential Conversion Financial Assurances. If NJCU and Riverkeeper consent, the Parties shall jointly move the Court to change the financial assurance mechanism or institution. The Court shall direct the cancellation of an existing Contingent Residential Conversion Financial Assurances instrument within 91 days after delivery to the Court of any replacement Contingent Residential Conversion Financial Assurances instrument. If Honeywell seeks a change in the mechanism for, or the institution providing, Contingent Residential Conversion Financial Assurances, Honeywell must demonstrate that the new mechanism or institution is allowed by New Jersey law and meets the requirements of this Consent Decree.

143. **Exclusive Court Jurisdiction.** Any Contingent Residential Conversion Financial Assurances instrument shall recite that the issuer or manager of the instrument submits to the exclusive jurisdiction of this Court for any and all disputes arising under the instrument.

144. **Procedures upon Honeywell's Default of Its Obligations.** Upon the occurrence of default by Honeywell as set forth in paragraph 133, NJCU or Riverkeeper may move the Court on an expedited basis for an order to draw on the Contingent Residential Conversion Financial Assurances instrument. If the Court grants any motion by NJCU or Riverkeeper pursuant to this paragraph, the sum approved by the Court's order granting the motion shall be

paid into a trust fund pursuant to paragraph 134, and the trust fund shall be administered pursuant to the terms and conditions of paragraphs 135, 136, and 137.

145. **Termination of Honeywell's Contingent Residential Conversion Financial Assurances Obligations.** Honeywell's obligation to provide Contingent Residential Conversion Financial Assurances under this Consent Decree shall terminate on the earlier of: (a) January 1, 2040, or (b) the date on which Honeywell has fulfilled its obligations under paragraph 77.

ARTICLE VI: TERMINATION

146. **Termination of this Consent Decree by Withdrawal.** In the event that the Court fails to enter this Consent Decree, any Party may elect to withdraw from this Consent Decree provided that such Party provides 30 days written notice of withdrawal to the other Parties. In the event this Consent Decree is terminated by withdrawal pursuant to this paragraph, the Consent Decree shall no longer be binding on the Parties and shall be of no further effect. In such event, each Party to this Consent Decree reserves all of its rights, claims, and defenses (both legal and factual) against the other Parties with respect to the Subject Matter of the Consolidated Litigation and each Party remains free to pursue such rights, claims, and defenses.

147. **Termination of this Consent Decree through Remediation.** Honeywell's and NJCU's obligations under this Consent Decree shall terminate completely and this Consent Decree shall be of no further force and effect with respect to a specific area within the NJCU Redevelopment Area upon (i) Honeywell's completion of all remedial activities with respect to that specific area under this Consent Decree and (ii) Honeywell's receipt of an Unrestricted Use No Further Action Determination for hexavalent chromium for that specific area.

ARTICLE VII: NOTICE

148. **Notice.** Any and all notices given in connection with this Consent Decree shall be deemed adequately given only if in writing and addressed to the Party for whom such notices

are intended at the addresses set forth in this paragraph. All notices shall be sent by Federal Express or other nationally recognized overnight messenger service or by first-class registered or certified mail, postage prepaid, return receipt requested. A written notice shall be deemed to have been given to the recipient party on the earlier of: (a) the date it shall be delivered to the address set forth in this paragraph; (b) the date delivery shall have been refused at the address set forth in this paragraph; or (c) with respect to notices sent by mail, the date as of which the postal service shall have indicated such notice to be undeliverable at the address set forth in this paragraph. Any and all notices referred to in this Consent Decree, or which any Party desires to give to the other, shall be addressed as follows:

If to Honeywell:

Tom Byrne, Esq.
Honeywell International Inc.
101 Columbia Road
Morristown, NJ 07962
(973) 455-2775

With copies to:

John Morris
Honeywell International Inc.
101 Columbia Road
Morristown, NJ 07962
(973) 455-4003

Michael D. Daneker
Arnold & Porter, LLP
555 12th St., N.W.
Washington, DC 20004
(202) 942-5000

If to Riverkeeper:

Bruce J. Terris
Carolyn Smith Pravlik
Kathleen L. Millian
Terris, Pravlik & Millian, LLP
1121 12th St., N.W.
Washington, DC 20005-4632
(202) 682-2100

If to NJCU:

Aaron Aska
New Jersey City University
2039 Kennedy Boulevard,
Jersey City, New Jersey 07305
(201) 200-2035

If to BMUA:

Donna Russo
McManimon & Scotland LLC
One Riverfront Plaza
Fourth Floor
Newark, NJ 07102
(973) 622-7333

With copies to:

Robert A. Wayne, Esq.
LeClairRyan, a Virginia Professional
Corporation
Two Penn Plaza East
Newark, NJ 07105
(973) 491-3312

Any party may change its designated recipients or addresses for notice in this paragraph by providing written notice of such change to all other Parties.

ARTICLE VIII: RIVERKEEPER'S ATTORNEYS' FEES

149. **Payment of Past Fees and Expenses.** Honeywell and Riverkeeper agree that the Court may award Riverkeeper costs of litigation, including reasonable attorney and expert witness fees, as a prevailing or substantially prevailing party for the Consolidated Litigation to the extent allowed by federal law. However, they disagree as to the amount. Therefore, the following methodology shall be used to resolve the Outstanding Fees and Expenses in the Consolidated Litigation:

(a) Within 30 days of entry of this Consent Decree, Honeywell shall pay $1,000,000.00 to Terris, Pravlik & Millian, LLP. This payment shall not be considered a concession by Honeywell that Riverkeeper is entitled to any further payment of the Outstanding Fees and Expenses. Riverkeeper and/or Terris, Pravlik & Millian, LLP shall not be required to reimburse Honeywell for any part of the $1,000,000.00 regardless of the results of the procedure set forth in subparagraph (b).

(b) The following procedure shall be used to resolve whether Honeywell shall be required to pay an amount in addition to $1,000,000.00 for the Outstanding Fees and Expenses:

(i) As soon as possible after the entry of this Consent Decree, Riverkeeper shall provide Honeywell with appropriate billing materials, similar in content to Exhibits 5, 6, 7, 17, 18, 21, and 23 in support of the Plaintiffs' Application for an Award of Litigation Costs, Including Attorneys' Fees and Expert Witness' Fees in *ICO v. Honeywell*, and a brief statement of its request for the Outstanding Fees and Expenses. Riverkeeper's provision of materials to Honeywell or to the Court, if necessary under this procedure, shall not be considered a concession of Riverkeeper's position regarding the binding effect of the Prior Settlements.

(ii) Within 30 days of its receipt of the materials provided by Riverkeeper pursuant to subparagraph (b), Honeywell shall present Riverkeeper with a brief statement of all of its objections to the Outstanding Fees and Expenses. Riverkeeper and Honeywell shall thereafter engage in good-faith negotiations to attempt to resolve any disputes regarding Honeywell's objections. If the negotiations are unsuccessful, either Party may request mediation by Magistrate Judge Shwartz.

(iii) At any time after the passage of 60 days from the date that Riverkeeper submitted the documentation pursuant to subsubparagraph (i), Riverkeeper may file an application to the Court for an award of the Outstanding Fees and Expenses or any portion thereof that remains in dispute between Riverkeeper and Honeywell. Thereafter, briefing on the application shall occur pursuant to a schedule agreed to by Riverkeeper and Honeywell and approved by the Court. Negotiation and mediation may continue with the agreement of both

Riverkeeper and Honeywell. Any award for the Outstanding Fees and Expenses shall be off-set by the amount paid by Honeywell pursuant to subparagraph (a).

150. **Future Fees and Expenses.** Honeywell shall reimburse Riverkeeper's attorneys for reasonable fees and expenses incurred after the entry of this Consent Decree, including fees and expenses relating to Riverkeeper's efforts to obtain fees and expenses under paragraph 149, monitoring and enforcing this Consent Decree, and Riverkeeper's efforts to obtain fees and expenses for monitoring and enforcing this Consent Decree, to the extent allowed by federal law. Riverkeeper and Honeywell shall use the same procedure for resolving disputes as to fees and expenses set forth in paragraph 149(b). If Honeywell objects to only a portion of the Riverkeeper's statement of future attorneys' fees and expenses, Honeywell shall pay the undisputed portion within 60 days of Riverkeeper's submittal of the request for attorneys' fees and expenses to Honeywell. In the event of Honeywell's default, Riverkeeper may seek attorneys' fees from any fund established pursuant to the financial assurances provisions of this Consent Decree.

ARTICLE IX: MISCELLANEOUS PROVISIONS

151. **Force Majeure.** Force Majeure, for the purposes of this Consent Decree, is defined as an event arising from causes beyond the control of any Party or Parties (or their agents, contractors, subcontractors, representatives, or assigns) which could not have been overcome by reasonable diligence and which delays or prevents the performance of any obligation under this Consent Decree. Examples of events which may constitute force majeure include the refusal of any federal or state governmental authority to grant a permit or authorization necessary for the completion of actions required by this Consent Decree, floods, hurricanes, tornadoes, and other extraordinary weather events, earthquakes and other natural disasters, terrorist attacks, war, and other national emergencies. Examples of events that are not

force majeure events include normal inclement weather, increased costs or expense, the failure to timely and fully apply for a permit or authorization necessary for the completion of actions required by this Consent Decree, or financial difficulty of any Party. The Party claiming force majeure shall bear the burden of showing an event was a force majeure event.

152. **Successors and Assigns.** This Consent Decree shall be binding upon and shall inure to the benefit of the successors, assigns, heirs, corporate parents, subsidiaries, and affiliates of each Party, including by way of merger, consolidation, or reorganization. Notwithstanding the foregoing, a transferee of title to all or any part of the NJCU Commercial AOC shall only be bound by and have the benefits as and to the extent set forth in paragraph 89 of this Consent Decree. No assignment or delegation of the obligations hereunder shall release the assigning Party from its obligations under this Consent Decree except that (i) a transfer of all or any part of the NJCU Commercial AOC by NJCU or any subsequent owner shall release NJCU or the subsequent owner from the obligations of this Consent Decree as to the part of the NJCU Commercial AOC transferred as of the date of the transfer of title with the exception of those obligations set forth in paragraph 89(a), and (ii) a transfer of all or any part of the Residential AOC by NJCU or a subsequent owner shall release NJCU or the subsequent owner from the obligations set forth in paragraph 73 as to the part of the Residential AOC transferred as of the date of the transfer of title.

153. **Successors to Hackensack Riverkeeper, Inc.** In the event that Hackensack Riverkeeper, Inc. disbands, is dissolved, or otherwise ceases operations, it shall assign its rights under this Consent Decree to another qualified nonprofit organization. A nonprofit organization shall be qualified for assignment under this Consent Decree if it is a charitable organization under Section 501(c)(3) of the Internal Revenue Code or its substantial equivalent and has an established record of working to enhance or preserve the ecology, natural habitat, or

environment. Any such assignment shall be subject to approval by the Court, and Honeywell and NJCU shall have the right to object to any proposed assignment. Any successor organization shall have the duty to assign its rights under this Consent Decree to another qualified nonprofit organization in the event that the successor disbands, is dissolved, or otherwise ceases operations. In the event that a successor is not appointed at any given time, the Court shall request that the New Jersey Attorney General or equivalent officer appoint a successor subject to approval by the Court and objection by Honeywell and NJCU.

154. **Reservation of Rights and Claims.** Except as set forth expressly herein, this Consent Decree does not affect in any way any of the Parties' claims or defenses against third parties who have not signed the Consent Decree.

155. **Governing Law and Continuing Jurisdiction.** The Court shall retain jurisdiction over the matters addressed in this Consent Decree for purposes of enabling the Parties to apply to the Court for any further order as may be necessary to construe, carry out, or enforce the terms of this Consent Decree. This Consent Decree shall be interpreted and enforced under the laws of the United States and the State of New Jersey by the United States District Court for the District of New Jersey.

156. **Construction.** Questions regarding the interpretation of this Consent Decree shall not be resolved against any Party on the ground that this Consent Decree has been drafted by that Party. This Consent Decree is the result of review, negotiation, and compromise by each Party. The boldface word or words at the commencement of paragraphs and subparagraphs of this Consent Decree are included only as a guide to the contents thereof and are not considered as controlling, enlarging, or restricting the language or meaning of those paragraphs or subparagraphs.

157. **Authority to Enter into Agreement**. The undersigned representative for each Party represents, certifies, and warrants that he or she is duly authorized by the Party whom he or she represents to enter into the terms of this Consent Decree and bind such Party legally to this Consent Decree.

158. **Measures to Effectuate This Consent Decree**. NJCU and BMUA shall take all appropriate steps to ensure that this Consent Decree has been (and that actions required hereunder will be) duly considered, ratified, and approved.

159. **Modifications**. This Consent Decree may be modified by mutual agreement of the Parties, but such agreement must be in writing, duly and properly signed by all Parties, and shall be submitted to the Court for approval.

160. **Signatures**. This Consent Decree may be signed simultaneously or in counterparts by the respective signatories, which shall be as fully valid and binding as if a single document was signed by all of the signatories.

Consented to and approved for entry:

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APPROVED AND ENTERED as an Order of this Court this ___ day of _____, 2009.

Hon. Dennis M. Cavanaugh
United States District Judge

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APPROVED AND ENTERED as an Order of this Court this 21 day of JAN, ~~2009.~~ 2010

Hon. Dennis M. Cavanaugh
United States District Judge

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EXHIBIT E

Sewer Protocol

APPENDIX B

SEWER PROTOCOL

A. Investigation and Warning

1. The responsible party will investigate the sewer sites and delineate those areas of the Pipeline where Chromium Materials are present.

2. The responsible party will provide the utility with a map of those sections of sewer where Chromium Materials have been determined to be present and will fund training for utility employees on (a) recognition of Chromium Materials; (b) appropriate steps to be taken for worker protection; and (c) emergency utility repair procedures .

3. The responsible party and utility will develop administrative procedures to identify when Chromium Materials containing areas of the pipeline are scheduled for repair.

B. Remediation Protocols

1. Chromium Materials at the Surface. Whenever Chromium Materials or soils contaminated by Chromium Materials exceed the applicable standard for hexavalent chromium within the top 3 feet of soil, the presumptive remedy will consist of a capping system that includes, at a minimum, the following in vertical profile from top to bottom:

Asphalt or concrete cover,
Gravel subbase materials
Geocomposite drainage layer, e.g. geonet, as a capillary break
Linear Low Density Polyethylene (LLDP) liner
Geotextile Fabric.

2. Chromium Materials Beneath the Surface. Whenever Chromium Materials or soils contaminated by Chromium Materials exceed the applicable standard for hexavalent chromium at a depth of 3 feet or more below the surface, the presumptive remedy consists of a capping system that includes the top three feet of clean fill as an engineering control. In addition, an orange demarcation layer (orange snow fence) will be installed below the surface as a warning not to disturb the engineering control.

3. Chromium Materials Beneath a Public Street or Highway. Whenever Chromium Materials or soils contaminated by Chromium

Materials exceed the applicable standard for hexavalent chromium beneath a public street or highway, the presumptive remedy consists of a capping system that includes the street itself as an engineering control.

4. **Chromium Materials Excavation and Removal** It is understood that repair or replacement of sections of a pipeline may be required from time to time to maintain efficient operation over the years. Whenever such normal operating repairs or replacement requires the removal of Chromium Materials or soils contaminated by chromium exceeding the applicable standard for hexavalent chromium, the responsible party will remove the Chromium Materials and/or contaminated soil.

5. **Emergency Repairs** The responsible party and the utility will develop procedures to be followed in the event of an emergency repair to any utility in an area where Chromium Materials were placed as bedding or fill around the utility. Such procedures will include: (a) appropriate steps to be taken to ensure worker safety; (b) the provision of notice to DEP and the responsible party as soon as practicable after the repair is made; (c) provisions for handling and disposal of any COPR Materials or chromium contaminated soil removed during the repair; and (d) provisions for restoring any remedial measures taken pursuant to the Sewer Protocol.