Prepared for:
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Pittsburgh, PA

Prepared by:
APTIM
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Project No. 631022073
February 2, 2022

Remedial Investigation Report Addendum and Remedial Action Work Plan for Groundwater (AOC-10)

Final

Non-Residential Chromate Chemical Production Waste Site
Former Baldwin Oil Facility, Hudson County Chromate Site 63
1 Burma Road
Jersey City, Hudson County, New Jersey
Program Interest Number: G000008691

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List of Acronyms

ACO	Administrative Consent Order
AECOM	AECOM Environmental, Inc.
AOC	Areas of Concern
APTIM	Aptim Environmental & Infrastructure, LLC
bgs	below ground surface
CEA/WRA	Classification Exception Area/Well Restriction Area
CCPW	Chromate Chemical Production Waste
COCs	contaminants of concern
COPECs	Contaminants of Potential Environmental Concern
EWMA	EWMA, LLC
FSP/QAPP	Field Sampling Plan/Quality Assurance Project Plan
GWQS	Groundwater Quality Standards
HCC	Hudson County Chromate
IDW	Investigation Derived Waste
JCO	Partial Consent Judgment Concerning the PPG Sites
MDL	method detection limit
MS/MSD	matrix spike/matrix spike duplicate
NAVD88	North American Vertical Datum, 1988
NJDEP	New Jersey Department of Environmental Protection
NJTA	New Jersey Turnpike Authority
PI	Program Interest
ppm	parts per million
QA/QC	Quality Assurance/Quality Control
RAR	Remedial Action Report
RI	Remedial Investigation
RIR	Remedial Investigation Report
RIRA/RAWP	Remedial Investigation Report Addendum/Remedial Action Work Plan
RIWP	Remedial Investigation Work Plan
SOP	Standard Operating Procedure
Spectra	Spectra Energy Transmission Services
SRP	Site Remediation Program

Tetra Tech	Tetra Tech, Inc.
ug/l	microgram per Liter
USEPA	United States Environmental Protection Agency
VI	vapor intrusion

New Jersey Department of Environmental Protection
Site Remediation Program

REMEDIAL INVESTIGATION REPORT FORM

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Hudson County Chromate Site 63

List all AKAs: Baldwin Oils

Street Address: 1 Burma Road

Municipality: Jersey City (Township, Borough or City)

County: Hudson County Zip Code: 07305

Program Interest (PI) Number(s): G000008691 Case Tracking Number(s):

Date Remediation Initiated Pursuant to N.J.A.C. 7:26C-2: 04/04/2013

State Plane Coordinates for a central location at the site: Easting: 680427.1 Northing: 612405.9

Municipal Block(s) and Lot(s):

Block #	21503	Lot #	11	Block #	2154	Lot #	13
Block #	2154	Lot #	18B	Block #	1497	Lot #	3R
Block #		Lot #		Block #		Lot #	
Block #		Lot #		Block #		Lot #	

SECTION B. SUBMITTAL STATUS

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

	Not Applicable	Included in this Submission	Previously Submitted	Date Of Submission	Date of Revised Submission	Date of Document Withdrawal
Public Notification	☐	☐	☒	08/26/2015		
Immediate Environmental Concern Report	☒	☐	☐			
IEC Engineered System Response Action Report	☒	☐	☐			
Vapor Concern Mitigation Report	☒	☐	☐			
LNAPL Interim Remedial Measure Report	☒	☐	☐			
Preliminary Assessment Report	☒	☐	☐			
Receptor Evaluation	☐	☒	☐			
Site Investigation Report	☒	☐	☐			
Remedial Investigation/Remedial Action Work Plan	☐	☒	☐			
Remedial Action Report	☒	☐	☐			
Response Action Outcome	☒	☐	☐			
Alternative Soil Remediation Standard and/or Screening level Application Form	☒	☐	☐			
Case Inventory Document	☐	☒	☐			
Technical Impracticability Determination	☒	☐	☐			

Permit Application – list:	☒	☐	☐			
	☐	☐	☐			
	☐	☐	☐			
	☐	☐	☐			
Radionuclide Remedial Investigation Workplan	☒	☐	☐			
Radionuclide Remedial Investigation Report	☒	☐	☐			
Radionuclide Remedial Action Workplan	☒	☐	☐			
Radionuclide Remedial Action Report	☒	☐	☐			

SECTION C. SITE USE

Current Site Use (check all that apply)

- ☐ Industrial
- ☐ Residential
- ☐ Commercial
- ☐ School or child care
- ☐ Agricultural
- ☐ Park or recreational use
- ☐ Vacant
- ☐ Government
- ☒ Other Parking Lot, Underground Pipeline

Intended Future Site Use (check all that apply)

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

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

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

Federal Case (check all that apply)

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

☐ Other (explain): _____

SECTION E. PUBLIC FUNDS

Did the remediation utilize public funds? ☐ Yes ☒ No

If "Yes," check applicable:

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

SECTION F. SCOPE OF THE REMEDIAL INVESTIGATION REPORT

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

   If "Yes," provide date: 11/08/2019

SECTION G. SITE CONDITIONS

1. Has dioxin been detected in any site media? ☐ Yes ☒ No
2. Check each media-type and highest concentration of contamination present above any applicable standards/criteria at the time of remedial investigation:

Soil in ppm		GW = Ground Water in ppb				SW = Surface Water in ppb					Sed = Sediment in ppm					
	Soil ppm	GW ppb	SW ppb	Sed ppm		Soil ppm	GW ppb	SW ppb	Sed ppm		Soil ppm	GW ppb	SW ppb	Sed ppm	
*VOCs	☐	☐	☐	☐	<100	☐	☐	☐	☐	100–1,000	☐	☐	☐	☐	>1,000
*SVOCs	☐	☐	☐	☐	<100	☐	☐	☐	☐	100–1,000	☐	☐	☐	☐	>1,000
*PAHs	☐	☐	☐	☐	<10	☐	☐	☐	☐	10–100	☐	☐	☐	☐	>100
*Metals	☐	☐	☐	☐	<100	☐	☐	☐	☐	100–1,000	☒	☒	☐	☐	>1,000
PCBs	☐	☐	☐	☐	<10	☐	☐	☐	☐	10–100	☐	☐	☐	☐	>100
*Pesticides	☐	☐	☐	☐	<1	☐	☐	☐	☐	1-10	☐	☐	☐	☐	>10
Chromium	☐	☐	☐	☐	<100	☐	☐	☐	☐	100–1,000	☒	☒	☐	☐	>1,000
Mercury	☐	☐	☐	☐	<100	☐	☐	☐	☐	100–1,000	☐	☐	☐	☐	>1,000
Arsenic	☐	☐	☐	☐	<10	☐	☐	☐	☐	10–100	☐	☐	☐	☐	>100
EPH	☐			☐	<1,700	☐			☐	1,700–5,100	☐			☐	>5,100

3. For any contaminant group (*) checked above, identify the contaminant with the highest concentration over its applicable remediation standard and/or screening level:

Antimony Chromium Vanadium _____ _____

4. Were the laboratory reporting minimum detection limits below applicable remediation standards/ screening levels required for the site? ..... ☐ Yes ☒ No

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

Ground water:

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

Soil:

- ☐ On-site discharge(s) impacting soil off-site
- ☐ Chromate Chemical Production Waste/COPR
- ☐ Munitions and explosives of concern
- ☐ Contaminated soil in the saturated zone
- ☐ Historic pesticide impacts to soil
- ☐ Residual or free product
- ☐ Radionuclides
- ☐ Historic Fill
- ☐ Soil contamination due to naturally occurring background conditions
- ☐ Soil contamination in an ESNR

SECTION H. APPLICABLE REMEDIATION STANDARDS

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

2. Has compliance averaging been utilized to determine compliance with a pathway?..... ☐ Yes ☒ No
If "Yes," check all that apply:

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

3. Has a compliance option been utilized to determine compliance with the Impact to Ground Water Pathway? (If "Yes," check all that apply) ☐ Yes ☒ No
   - ☐ Immobile Compounds
   - ☐ Data evaluation for metals and semi-volatiles
   - ☐ Data evaluation for volatile organics derived from discharges of petroleum mixtures
4. Were Alternate Remediation Standards used for the Ingestion/Dermal Pathway? ☒ Yes ☐ No
5. Were Alternate Remediation Standards used for the Inhalation Pathway? ☐ Yes ☒ No
6. Were Site Specific Standards used for the Impact to Ground Water Pathway? ☒ Yes ☐ No
   (If "Yes," check all that apply)
   - ☐ Soil-Water Partitioning Equation ☒ SPLP ☐ Sesoil ☐ Sesoil/AT123D
   - ☐ DAF Modification ☐ Immobile Chemicals List
   - ☐ Soil and Ground Water Analytical Data Evaluation
7. Were Site Specific Ecological Remediation Goals used? ☐ Yes ☒ No
8. What is the ground water classification for this site as per N.J.A.C. 7:9C? (check all that apply)
   - ☐ Class I-A
   - ☐ Class I-PL Pinelands Protection Area
   - ☐ Class I-PL Pinelands Preservation Area
   - ☒ Class II-A
   - ☐ Class III-A
   - ☐ Class III-B

SECTION I. BACKGROUND CONDITIONS

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

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

SECTION J. ALTERNATIVE STANDARD / VARIANCES

Alternative remediation standard

If proposing an alternative remediation standard pursuant to N.J.A.C. 7:26D-7.4, alternate vapor intrusion screening level, or ecological site specific goal check here ☐ and attach the Alternative Soil Remediation Standard and/or Screening Level Application Form as an addendum.

A site-specific screening level was developed for the evaluation of the VI pathway ☐ Yes ☒ No

Variance from regulations

If the Licensed Site Remediation Professional has varied from the Technical Rules, provide the citation(s) from which the remediation varied and the page(s) in the attached document where the rationale for the variance is provided.

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

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

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

SECTION K. HISTORIC FILL

Is historic fill present at the site? ☐ Yes ☒ No

If "Yes," answer the following questions:

1. Indicate how the presence of historic fill was determined (check all that apply):
   ☐ Boring logs ☐ Test Pits ☐ Trenches ☐ Aerial Photos ☐ NJDEP Mapped Areas
2. Was the historic fill characterized pursuant to N.J.A.C. 7:26E-4.7 and the NJDEP Historic Fill Material Technical Guidance Document? ☐ Yes ☐ No
3. Are any other AOCs (i.e., location of discharge and any contaminants that may have migrated from that area) located within the defined boundaries of the historic fill? ☐ Yes ☐ No

   If "Yes," have the same contaminant type(s) (e.g., lead, arsenic, and/or benzo(a)pyrene, etc.) characterized as being present in the historic fill been **sampled for** as a contaminant of concern at these co-located AOCs? ☐ Yes ☐ No

SECTION L. GROUND WATER TRIGGER

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

SECTION M. GROUND WATER REMEDIAL INVESTIGATION INFORMATION

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

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

   If "Yes," answer questions 3a and 3b.
   a. Were bedrock cores collected? ☐ Yes ☐ No
   b. Were geophysical logging methods conducted to characterize the bedrock aquifer in accordance with the NJDEP Ground Water Technical Guidance (3.4.2.2)? ☐ Yes ☐ No
4. Is contamination in ground water fully delineated? ☒ Yes ☐ No

SECTION N. ECOLOGICAL RECEPTORS

1. Have soil, sediment, and/or surface water data been collected from Environmentally Sensitive Natural Resources (ESNR)? ☐ Yes ☐ No ☒ NA
   a. If "Yes," do contaminant concentrations at the ESNR exceed ecological screening criteria or the aquatic chronic NJSWQS [N.J.A.C.7:9B]? ☐ Yes ☐ No
   b. If "Yes," have soil and sediment data been collected from both surface and subsurface intervals in the ESNR? ☐ Yes ☐ No
   c. If "No" for 1b, provide explanation _____
2. Have contaminant migration pathways from the site/AOC to the ESNR been identified? ☐ Yes ☐ No
3. Do the results of the Ecological Evaluation require a remedial investigation of ecological receptors? ☐ Yes ☐ No

   If "No," provide explanation _____
4. Has an Ecological Risk Assessment been conducted [N.J.A.C.7:26E-4.8]? ☐ Yes ☐ No
5. Is remediation required in an ESNR? ☐ Yes ☐ No

SECTION O. LABORATORY DATA

1. Were all data submitted in the appropriate full and/or reduced formats according to the deliverables defined in N.J.A.C. 7:26E-2? ☒ Yes ☐ No
2. Do all data submitted meet the quality assurance/quality control (QA/QC) requirements incorporated by reference in N.J.A.C. 7:26E-2 for:
   sampling ☒ Yes ☐ No
   analysis ☒ Yes ☐ No
3. How was it determined that the data complied with the QA/QC requirements?
   - ☐ Laboratory non-conformance summary/narrative
   - ☐ Laboratory correspondence
   - ☐ LSRP review
   - ☐ Independent contractor review
   - ☒ Other: Data Validation was completed by APTIM

4. Has any data been qualified and used? ☒ Yes ☐ No
5. Has any data been rejected and used? ☐ Yes ☒ No
6. Comments:

Please refer to Section 6.0 of the RIRA/RAWP.

SECTION P. MISCELLANEOUS

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

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

   _____

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

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

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

   If "Yes," identify AOC(s): _____

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

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

4. Did the remedial investigation include sampling to characterize any on-site contaminated media for either on-site or off-site reuse? ☐ Yes ☒ No
5. Has clean fill has been brought onto the site? ☒ Yes ☐ No

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

   If "Yes," explain: _____
7. Have past deficiencies/notice of deficiencies been addressed in this submittal? ☒ Yes ☐ No

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

Full Legal Name of the Person Responsible for Conducting the Remediation: PPG Industries Inc

Representative First Name: Jody Representative Last Name: Overmyer

Title: Senior Remediation Project Manager

Phone Number: 7243255070 Ext: Fax:

Mailing Address: 440 College Park Drive

City/Town: Monroeville State: PA Zip Code: 15146

Email Address: overmyer@ppg.com

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

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

Signature: Date: 2/2/2022

Name/Title: Jody Overmyer / Senior Remediation Prj Mgr

No changes to contact information since last submittal ☐

SECTION R. LICENSED SITE REMEDIATION PROFESSIONAL INFORMATION AND STATEMENT

LSRP ID Number: _____

First Name: _____ Last Name: _____

Phone Number: _____ Ext: _____ Fax: _____

Mailing Address: _____

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

Email Address: _____

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

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

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

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

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

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

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

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

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

LSRP Signature: _____ Date: _____

LSRP Name/Title: _____

Company Name: _____

No changes to contact information since last submittal ☐

Completed forms should be sent to:

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

New Jersey Department of Environmental Protection
Site Remediation and Waste Management Program

RECEPTOR EVALUATION (RE) FORM

Date Stamp
(For Department use only)

SECTION A. SITE

Site Name: Hudson County Chromate Site 63

Program Interest (PI) Number(s): G000008691

Communication Center Number(s) and/or ISRA number(s) for this submission: (as *many as will fit in the space provided)*

This form must be attached to the Cover/Certification Form if not submitted through a Remedial Phase Online Service

Indicate the type of submission:

☐ Initial RE Submission

☒ Updated RE Submission

Indicate the reason for submission of an updated RE form

- ☐ Submission of an Immediate Environmental Concern (IEC) source control report;
- ☒ Submission of a Remedial Investigation Report;
- ☐ Submission of a Remedial Action Report;

Check if included in updated RE

- ☐ The known concentration or extent of contamination in any medium has increased;
- ☐ A new AOC has been identified;
- ☐ A new receptor is identified;
- ☐ A new exposure pathway has been identified.

SECTION B. ON SITE AND SURROUNDING PROPERTY USE

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

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

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

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

☐ Industrial	☐ Residential	☒ Commercial
☐ School or child care	☐ Government	☐ Park or recreational use
☐ Vacant	☐ Agricultural	☒ Other: Parking Lot, Underground Pipeline

3. Planned future on-site uses and off-site uses within 200 feet of the site boundary (*check all that apply*):

On-Site	Off-Site		On-Site	Off-Site		On-Site	Off-Site	
☐	☐	Industrial	☐	☐	Residential	☒	☐	Commercial
☐	☐	School or child care	☐	☐	Government	☐	☐	Park or recreational use
☐	☐	Vacant	☐	☐	Agricultural	☒	☐	Other: Parking Lot, Underground Pipe

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

SECTION C. DESCRIPTION OF CONTAMINATION

1. Identify if any of the following exist at the site:

Yes	No	
☐	☒	Free product [N.J.A.C. 7:26E-1.8] identified is ☐ LNAPL* or ☐ DNAPL**.
		Date identified: _____
☐	☒	Residual product [N.J.A.C. 7:26E-1.8]
☐	☒	Other primary source materials not identified above (e.g., buried drums, containers, unsecured friable asbestos). See form instructions for additional information.
		Explain: _____

* LNAPL – measured thickness of .01 feet or more

**DNAPL – See *Ground Water Technical Guidance* and *USEPA Assessment and Delineation of DNAPL Source Zones at Hazardous Waste Sites* (attached as Appendix A of the NJDEP GW Guidance) available at: http://www.nj.gov/dep/srp/guidance/#pa_si_ri_gw. Also, see US EPA DNAPL Overview available at: http://cluin.org/contaminantfocus/default.focus/sec/Dense_Nonaqueous_Phase_Liquids_(DNAPLS)/cat/Overview

2. Soil Migration Pathway

Has soil contamination been delineated to the applicable Direct Contact Soil Remediation Standard pursuant to N.J.A.C. 7:26E-4.2? ..... ☒ Yes ☐ No

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

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

SECTION D. GROUND WATER USE

1. Have all potentially contaminated areas of concern been evaluated to determine if there is a potential that ground water is contaminated pursuant to N.J.A.C. 7:26E-3.5? ..... ☒ Yes ☐ No

   If "**No**," proceed to Section E.

2. Is a ground water investigation required? ..... ☒ Yes ☐ No

   If "**No**," proceed to Section E.

3. Has a groundwater investigation been conducted? ..... ☒ Yes ☐ No

   If "**Yes**":
   Has the laboratory data package been received? ..... ☒ Yes ☐ No

   If the laboratory data package has not been received, provide the expected due date for data: _____ and proceed to Section E.

   If "**No**":
   Proceed to Section E.

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

   If "**Yes**": Provide the date that the laboratory data package was available and confirmed contamination was identified above the Ground Water Remediation Standards. Date: 08/08/2011

   If "**No**": Proceed to Section E.

5. Has ground water contamination been delineated to the applicable Remediation Standard pursuant to N.J.A.C 7:26E-4.3? ..... ☒ Yes ☐ No

6. What is the ground water classification for this site as per N.J.A.C. 7:9C? (*check all that apply*)

☐ Class I-A	☒ Class II-A
☐ Class I-PL Pinelands Protection Area	☐ Class III-A
☐ Class I-PL Pinelands Preservation Area	☐ Class III-B

7. Has a well search been completed? ☒ Yes ☐ No

Date of most recent or updated well search: 10/29/2021

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

Note: Redacted wells must be excluded from all non-confidential documents including maps, tables, etc. (see RE Instructions).

If "**No**," explain: _____

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

If "**Yes**,":

- A door to door survey is required in accordance with [N.J.A.C.7:26E-1.14(a)ii]. Attach results of the door to door survey.
- Identify if any of the following conditions exist based on the well search and door to door survey [N.J.A.C.7:26E-1.14(a)]:

Yes	No	
☐	☒	Potable wells located within 500 feet from the downgradient edge of the currently known extent of contamination.
☐	☒	Potable wells located 250 feet upgradient or 500 feet side gradient of the currently known extent of contamination.
☐	☒	Ground water contamination from the discharge is located within a Tier 1 wellhead protection area (WHPA).

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

If "No," provide justification then proceed to Question 12.

GW contamination limited to shallow zone only; wells located >500-feet downgradient of site

11. Has contamination been identified in potable well(s), **not attributed to background conditions**, above the Class II Ground Water Remediation Standards or State Safe Drinking Water levels, N.J.A.C 7:1E, whichever is applicable? ☐ Yes ☐ No

If "**Yes**":

- Provide the date laboratory data package was received: _____
- Follow the **IEC** Guidance Document at http://www.nj.gov/dep/srp/guidance/IEC/index.html for required actions and answer the following:
- Has an engineered system response action been completed on all impacted receptors? ☐ Yes ☐ No
  Provide a brief narrative description:

Date completed: _____ NJDEP Case Manager: _____

12. Has contamination been identified in non-potable well(s), **not attributed to background conditions**, above the Class II Ground Water Remediation Standards? ☐ Yes ☒ No

If "**Yes**," provide the date laboratory data package was received: _____

13. Has the ground water use evaluation been completed pursuant to N.J.A.C. 7:26E-1.14? ☒ Yes ☐ No

SECTION E. VAPOR INTRUSION (VI)

1. Indicate if any of the following conditions exist that trigger a Vapor Intrusion investigation. For each condition checked "Yes", provide the date the condition was first identified (e.g. date laboratory data package was available). (*see NJDEP Vapor Intrusion Technical Guidance*)

Yes	No		Date Condition First Identified
☐	☒	Ground water contamination in excess of the NJDEP Vapor Intrusion Ground Water Screening Levels (VIGWSL) and within 30 feet of a building for Petroleum Hydrocarbon Compounds (PHC) or 100 feet for non-PHC compounds	
☐	☒	Free product within 30 feet of a building for PHC or 100 feet for non-PHC compounds	
☐	☒	Soil gas contamination detected at concentrations that exceed the Soil Gas Screening Levels (SGSL)	
☐	☒	Indoor air contamination that exceeds the Indoor Air Screening Levels	
☐	☒	Wet basement or sump containing free product or ground water containing detectable concentration of volatile organic contaminants	
☐	☒	Methane generating conditions causing oxygen deficient or explosion concern	
☐	☒	Other human or safety concern from the VI pathway (i.e. elemental mercury, unsaturated soil contamination), *explain below:*	

If you checked "No" to <u>all</u> boxes in Question 1., proceed to Section F, "Ecological Receptors", otherwise complete the rest of this section.

2. Has ground water contamination been delineated to the applicable Vapor Intrusion Ground Water Screening Levels pursuant to N.J.A.C 7:26E-4.3? ☐ Yes ☐ No

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

4. Identify and locate, on a scaled map, any buildings/sensitive populations that exist within the following distances from ground water contaminant concentrations above the Vapor Intrusion Ground Water Screening Levels or other specific triggers noted in Question 1 above.:

Yes	No	
☐	☐	30 feet of petroleum free product or dissolved petroleum hydrocarbon contamination in ground water
☐	☐	100 feet of any non-petroleum free product (e.g. chlorinated hydrocarbons) or any non-petroleum dissolved volatile organic ground water contamination
☐	☐	Other specific triggers
☐	☐	No buildings exist within the specified distances or other specific triggers

5. Is the vapor intrusion pathway a concern at or adjacent to the site? (if "No," attach justification) ☐ Yes ☐ No

6. Has soil gas sampling of the building(s) been conducted? ☐ Yes ☐ No

   If "**Yes**," has the laboratory data package been received? ☐ Yes ☐ No

   If the data package was received, did constituents exceed the Soil Gas Screening Levels? ☐ Yes ☐ No

   If "**No**," attach technical justification consistent with the NJDEP Vapor Intrusion Technical Guidance.

7. Has indoor air sampling been conducted at the identified building(s)? ☐ Yes ☐ No

   If "**Yes**," has the laboratory data package been received? ☐ Yes ☐ No

   If the data package has been received, did constituents exceed the Indoor Air Screening Levels? ☐ Yes ☐ No

   If "**No**," or awaiting indoor air laboratory data package, proceed to Question 12.

8 Has indoor air contamination been identified but not suspected to be from a discharge? (if "**Yes**," attach justification) ☐ Yes ☐ No

9. Were indoor air results above the NJDEP's Rapid Action Levels? ☐ Yes ☐ No

If "**Yes**":

- Provide the date laboratory data package was received: _____
- Follow the **IEC** Guidance Document at http://www.nj.gov/dep/srp/guidance/index.html#iec for required actions and answer the following:
- Was the IEC engineering system response for control implemented for all impacted structures? ☐ Yes ☐ No

  Date implemented: _____ NJDEP Case Manager: _____

10. Were the results of indoor air sampling above the NJDEP's Indoor Air Screening Levels but at, or below, the Rapid Action Levels ☐ Yes ☐ No

If "**Yes**," answer the following:

- Provide the date laboratory data package was received: _____
- Has the Vapor Concern (VC) Response Action Form notifying the NJDEP of the exceedances been submitted? ☐ Yes ☐ No

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

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

  Date: _____

11. Do one or more buildings have an Indeterminate VI Pathway status? ☐ Yes ☐ No

If "**Yes**," attach a list of the building(s) with address(s) and block/lot(s)

12. Has the vapor intrusion investigation been completed? ☐ Yes ☐ No

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

SECTION F. ECOLOGICAL RECEPTORS

1. Has an Ecological Evaluation (EE) been conducted? [N.J.A.C. 7:26E-1.16] ☒ Yes ☐ No

   Date conducted: 01/11/2011

2. Are any site-related contaminants above any Ecological Screening Criteria? ☐ Yes ☒ No
3. Are there any Environmentally Sensitive Natural Resources (ESNRs) on or adjacent to the site, or potentially impacted by site related contamination? [N.J.A.C. 7:26E-1.16] ☐ Yes ☒ No
4. Do any potential or complete migration pathways exist between Contaminant of Potential Ecological Concern (COPECs) and ESNRs, or did historic migration pathways exist? ☐ Yes ☒ No

If You answered "No" to Questions 2, 3, or 4, above Stop Here (form is complete).

5. If site-related free or residual product is/was present, does/did a potential or complete migration pathway exist to an ESNR? ☐ Yes ☐ No
6. Do the results of an EE trigger a remedial investigation of ecological receptors? [N.J.A.C. 7:26E-4.8] ☐ Yes ☐ No

   If "**Yes**", has a remedial investigation of ecological receptors been conducted? ☐ Yes ☐ No

   Date conducted: _____

7. Do available data indicate an impact (COPECs above Ecological Screening Criteria in ESNRs) to Ecological Receptor(s), Surface water, or Sediment? ☐ Yes ☐ No

   If "**Yes**,"

   a) Check all ESNRs or media that apply:

   ☐ Surface water ☐ Sediment ☐ Soil ☐ Wetlands

   b) If this information is not submitted with an ecological evaluation that includes contaminant summary information, attach a brief summary of all currently available data and a description of all actions to be taken to mitigate exposure.

8. Have COPECs been fully delineated to the Ecological Screening Criteria [N.J.A.C. 7:26E-4.8(a)] in:

   a) Migration pathways ☐ Yes ☐ No

   b) ESNR ☐ Yes ☐ No

9. Has an Ecological Risk Assessment been conducted? ☐ Yes ☐ No

10. Provide the following information for any on-site and/or off-site surface water body, which is potentially impacted by the site related discharges:

Surface Water Body Name	Stream Classification	Antidegradation Designation	Trout Production	Trout Maintenance
			☐	☐
			☐	☐
			☐	☐
			☐	☐
			☐	☐
			☐	☐

11. Has a Program Interest (PI) or Permit number been issued for any regulated areas by the Division of Land Use Regulation? (e.g. wetlands, transition areas, flood hazard areas, coastal areas, tidelands, etc.). ☐ Yes ☐ No

    If "**Yes**,":

    Identify the type(s) of regulated areas: _____

    Provide the Land Use Regulation Program (LURP) PI or Permit number(s) for the site:

    _____

12 Are there any **pending** applications for LURP jurisdiction letters or approvals under review by the NJDEP for the remediation? ☐ Yes ☐ No

13. Are there any **valid** LURP jurisdiction letters or approvals issued for the remediation? ☐ Yes ☐ No

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

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

N
W E
S

Legend

Well type

- Industrial
- Irrigation

E2600004392 Well permit number

This map is set in NJ State Plane coordinate system (NAD83)

REFERENCE:

NJDEP Well search for SRP Receptor Evaluation, last updated 8/16/2018

StreetMap USA

1,000 500 0 1,000 Feet

SITE 063
BURMA ROAD
BLOCK 2154.4 LOT 4
JERSEY CITY, NJ

FIGURE NUMBER 1

1000 FEET AND 0.5 MILE WELL SEARCH MAP

APTIM
200 Horizon Center, Suite 250
Trenton, NJ 08691
www.APTIM.com

SITE NAME	Hudson County Chromate Site 63	Enter no information beyond column B
SITE STREET ADDRESS	1 Burma Road	
SITE COUNTY (select)	Hudson	
SITE MUNICIPALITY (select)	Jersey City	
PROGRAM INTEREST (PI) ID # :	G000008691	
SOURCE COORDINATE X	612280	
SOURCE COORDINATE Y	680476	
GROUNDWATER FLOW DIRECTION USED (if any)	SE	
WERE APPLICABLE WELL TYPES FOUND? (Yes/No)	Yes	
IS THIS SUBMISSION AN UPDATE? (Yes/No)	Yes	
AUTHOR (name of company)	Aptim Environmental & Infrastructure, LLC	
AUTHOR STREET ADDRESS (include town and zip code)	17 Princess Road, Lawrence Township 08648	
LSRP LICENSE NUMBER OVERSEEING WORK		
LSRP NAME OVERSEEING WORK		
PROFESSIONAL WHO PREPARED SUBMISSION	Crystal Leavey	
EMAIL CONTACT	crystal.leavey@aptim.com	
PHONE CONTACT	609-588-6154	

Download_Documen	Permit_Number	Well_Use	Potentially_Potable	Document	Date (permitted/drille	Physical_Address	County	Municipality	Block	Lot
	2600004392	Industrial	Yes	Permit	4/23/1971	Morris Pesin	Hudson	Jersey City		
	2600004392	Industrial	Yes	Record	4/27/1971	Morris Pesin	Hudson	Jersey City		
	2600049931	Industrial	Yes	Permit	2/3/1998	758 GARFIELD AVE.	Hudson	Jersey City	1487	11A, 11B
	E201605261	Irrigation	Yes	Permit	5/4/2016	100 Caven Point Road	Hudson	Jersey City	27401	16
	E201605261	Irrigation	Yes	Record	6/3/2016	100 Caven Point Road	Hudson	Jersey City	27401	16
	E201503280	Industrial	Yes	Record	5/13/2015	Martin Luther King Jr. Drive	Hudson	Jersey City	21201	17
	E201503280	Industrial	Yes	Permit	4/9/2015	Martin Luther King Jr. Drive	Hudson	Jersey City	21201	17

Permit_Number	Location_Method	Easting_X	Northing_Y	Distance_(feet)	Depth (feet)	Capacity (gal/min)	COORD_METHOD	TOP_OPEN_INT	BOT_OPEN_INT	STATIC_LEVEL	STATUS	WELL_SAMPLED?
2600004392	Prop Loc - Hard Copy	613468	678828	1,944	150	40						
2600004392	Prop Loc - Hard Copy	613468	678828	1,944	80							
2600049931	Prop Loc - Hard Copy	610374	681545	2,072	300	65						
E201605261	Digital Image	609444	678650	3,373.01	300	65					Outside Canvass	
E201605261	GPS	609444	678650	3,373.01	300						Outside Canvass	
E201503280	GPS	609575	684261	4,652.23	450	40					Outside Canvass	
E201503280	GPS	609575	684261	4,652.23	300	10					Outside Canvass	

APTIM
200 Horizon Center
Trenton, New Jersey 08691
Tel: 609-584-8900
Fax: 609.588.6300
www.aptim.com

May 19, 2020

171 HILLSIDE, LLC
2 BURMA RD.
JERSEY CITY, NJ 07305

Re: Potable Well Questionnaire
95 BURMA ROAD
Block 21503, Lot 10
Jersey City, Hudson County, NJ

To Whom It May Concern:

On behalf of our client, APTIM Environmental & Infrastructure LLC (APTIM) is conducting a door-to-door survey to identify nearby potable (drinking water and/or irrigation) wells in the Jersey City area. Our client is required to evaluate groundwater usage pursuant to the New Jersey Department of Environmental Protection (NJDEP) *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E-1.14(a)2 et seq.). If you have a private potable well at your property, we may ask to collect a sample at no cost to you. If sampling is conducted, a summary of the analytical test results will be provided.

Enclosed is a questionnaire that will help us determine if you have a private potable well at your property. We ask that you complete this form and return it no later than May 29, 2020. You return the form using your preferred method: mail (return envelope enclosed), email, or fax.

Upon receipt of your well questionnaire, APTIM will contact if you have a private potable well at your property. Any follow up, if required, will be conducted in June 2020.

Thank you for your assistance in this matter. If you have any questions regarding this well survey, please contact Crystal Leavey at 609-588-6154 or crystal.leavey@aptim.com.

Sincerely,

Crystal L. Leavey, LSRP
Project Manager II

Enclosure

Crystal L. Leavey, LSRP
APTIM
200 Horizon Center Boulevard
Trenton, NJ 08691
Phone: (609) 588-6154
Email: crystal.leavey@aptim.com
Fax: (609) 588-6300

WELL LOCATION

Street Address: 95 BURMA ROAD

Municipality: Jersey City, Hudson County, NJ

Block/Lot #: 21503 / 10

POTABLE WELL INFORMATION FORM

Please complete the questions below by writing the answer in the space provided or by circling the most appropriate response, and return this form to us by May 29, 2020.

Date: _____

1. Indicate your relationship to this property. (Circle one)

   Property Owner Renter/Lessee Other (please explain)_____

Please provide your contact information/mailing address.

NAME: _____
ADDRESS: _____
PHONE #: _____ (home) _____ (work) _____ (cell)
Please circle the phone number above that you prefer we use to contact you.
E-MAIL ADDRESS: _____

If you are a renter or tenant, please provide the owner's contact information.

NAME: _____
ADDRESS: _____
PHONE #:_____ (home) _____ (work) _____ (cell)

2. Is any of the water used at the residence supplied by a private well? **YES NO**
   (<u>If NO, please stop here and return form</u>)

3. What is the depth of the well? _____ feet Check here if unknown:_____

4. Does the well supply water for any other residences? **YES NO Unknown**
   If **YES**, how many? _____

5. Do you use the well water for drinking and/or cooking? **YES NO**

   If **NO**, what is the source of your drinking/cooking water? _____

6. Do you use the well water for:
   bathing? **YES NO**
   washing clothes? **YES NO**
   lawn/garden/irrigation? **YES NO**

7. Has this well been tested recently? **YES NO**

If **YES**, please enclose a copy of the results if possible.

a) What date was it most recently tested? _____

b) Who tested the well water? _____

c) What was the well tested for? (Circle all that apply.)

Bacteria
Volatile Organics
Metals
Other (please explain): _____

d) Did the sampling detect any contaminants? **YES** **NO**

8. We would like to sample untreated water. Do you have any treatment system(s) on the well? **YES** **NO**

If **YES**,

a. What type of water treatment system(s) do you have? (Circle all that apply)

Softener
Iron removal
Sediment Filter
Carbon Filter
Turbidity removal
pH adjustment
Disinfection
Chlorinators
Acid neutralizer
Other: (please specify): _____

b. Can the treatment system be bypassed to collect an untreated water sample? **YES** **NO** **NOT SURE**

If **YES**, how can the system be bypassed? (Circle all that apply)

Outside spigot bypasses treatment
Faucet in basement
Faucet on holding tank
Treatment system can be shut off

If **NO**,

Is there an outside spigot from which we can take a sample? **YES** **NO**

Where is the spigot located? _____

9. If we cannot take an untreated sample from the outside spigot, would it be possible to schedule a meeting with someone at this location on a weekday to collect a water sample? **YES** **NO**

10. Please provide any other information that you feel would be helpful for us to know about your well.

WELL LOCATION

Street Address: 95 BURMA ROAD

Municipality: Jersey City, Hudson County, NJ

Block/Lot #: 21503 / 10

APTIM
200 Horizon Center
Trenton, New Jersey 08691
Tel: 609-584-8900
Fax: 609.588.6300
www.aptim.com

May 19, 2020

STATE OF NEW JERSEY
JOHN FITCH PLAZA
TRENTON, NJ 08625

Re: Potable Well Questionnaire
NEW YORK BAY
Block 24306, Lot 10
Jersey City, Hudson County, NJ

To Whom It May Concern:

On behalf of our client, APTIM Environmental & Infrastructure LLC (APTIM) is conducting a door-to-door survey to identify nearby potable (drinking water and/or irrigation) wells in the Jersey City area. Our client is required to evaluate groundwater usage pursuant to the New Jersey Department of Environmental Protection (NJDEP) *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E-1.14(a)2 et seq.). If you have a private potable well at your property, we may ask to collect a sample at no cost to you. If sampling is conducted, a summary of the analytical test results will be provided.

Enclosed is a questionnaire that will help us determine if you have a private potable well at your property. We ask that you complete this form and return it no later than May 29, 2020. You return the form using your preferred method: mail (return envelope enclosed), email, or fax.

Upon receipt of your well questionnaire, APTIM will contact if you have a private potable well at your property. Any follow up, if required, will be conducted in June 2020.

Thank you for your assistance in this matter. If you have any questions regarding this well survey, please contact Crystal Leavey at 609-588-6154 or crystal.leavey@aptim.com.

Sincerely,

Crystal L. Leavey, LSRP
Project Manager II

Enclosure

Crystal L. Leavey, LSRP
APTIM
200 Horizon Center Boulevard
Trenton, NJ 08691
Phone: (609) 588-6154
Email: crystal.leavey@aptim.com
Fax: (609) 588-6300

WELL LOCATION

Street Address: NEW YORK BAY
Municipality: Jersey City, Hudson County, NJ
Block/Lot #: 24306 / 10

POTABLE WELL INFORMATION FORM

Please complete the questions below by writing the answer in the space provided or by circling the most appropriate response, and return this form to us by May 29, 2020.

Date: _____

1. Indicate your relationship to this property. (Circle one)

   Property Owner Renter/Lessee Other (please explain)_____

Please provide your contact information/mailing address.

NAME: _____
ADDRESS: _____
PHONE #: _____ (home) _____ (work) _____ (cell)
Please circle the phone number above that you prefer we use to contact you.
E-MAIL ADDRESS: _____

If you are a renter or tenant, please provide the owner's contact information.

NAME: _____
ADDRESS: _____
PHONE #:_____ (home) _____ (work) _____ (cell)

2. Is any of the water used at the residence supplied by a private well? **YES NO**
   (<u>If NO, please stop here and return form</u>)

3. What is the depth of the well? _____ feet Check here if unknown:_____

4. Does the well supply water for any other residences? **YES NO Unknown**
   If **YES**, how many? _____

5. Do you use the well water for drinking and/or cooking? **YES NO**

   If **NO**, what is the source of your drinking/cooking water? _____

6. Do you use the well water for:
   bathing? **YES NO**
   washing clothes? **YES NO**
   lawn/garden/irrigation? **YES NO**

7. Has this well been tested recently? **YES NO**

If **YES**, please enclose a copy of the results if possible.

a) What date was it most recently tested? _____

b) Who tested the well water? _____

c) What was the well tested for? (Circle all that apply.)

Bacteria
Volatile Organics
Metals
Other (please explain): _____

d) Did the sampling detect any contaminants? **YES** **NO**

8. We would like to sample untreated water. Do you have any treatment system(s) on the well? **YES** **NO**

If **YES**,

a. What type of water treatment system(s) do you have? (Circle all that apply)

Softener
Iron removal
Sediment Filter
Carbon Filter
Turbidity removal
pH adjustment
Disinfection
Chlorinators
Acid neutralizer
Other: (please specify): _____

b. Can the treatment system be bypassed to collect an untreated water sample? **YES** **NO** **NOT SURE**

If **YES**, how can the system be bypassed? (Circle all that apply)

Outside spigot bypasses treatment
Faucet in basement
Faucet on holding tank
Treatment system can be shut off

If **NO**,

Is there an outside spigot from which we can take a sample? **YES** **NO**

Where is the spigot located? _____

9. If we cannot take an untreated sample from the outside spigot, would it be possible to schedule a meeting with someone at this location on a weekday to collect a water sample? **YES** **NO**

10. Please provide any other information that you feel would be helpful for us to know about your well.

WELL LOCATION

Street Address: NEW YORK BAY

Municipality: Jersey City, Hudson County, NJ

Block/Lot #: 24306 / 10

APTIM
200 Horizon Center
Trenton, New Jersey 08691
Tel: 609-584-8900
Fax: 609.588.6300
www.aptim.com

May 19, 2020

N.J DEPT. OF ENVIRONMENTAL PROTECTI
401 EAST STATE STREET
TRENTON, NJ 08625

Re: Potable Well Questionnaire
CAVEN POINT ROAD
Block 24306, Lot 2
Jersey City, Hudson County, NJ

To Whom It May Concern:

On behalf of our client, APTIM Environmental & Infrastructure LLC (APTIM) is conducting a door-to-door survey to identify nearby potable (drinking water and/or irrigation) wells in the Jersey City area. Our client is required to evaluate groundwater usage pursuant to the New Jersey Department of Environmental Protection (NJDEP) *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E-1.14(a)2 et seq.). If you have a private potable well at your property, we may ask to collect a sample at no cost to you. If sampling is conducted, a summary of the analytical test results will be provided.

Enclosed is a questionnaire that will help us determine if you have a private potable well at your property. We ask that you complete this form and return it no later than May 29, 2020. You return the form using your preferred method: mail (return envelope enclosed), email, or fax.

Upon receipt of your well questionnaire, APTIM will contact if you have a private potable well at your property. Any follow up, if required, will be conducted in June 2020.

Thank you for your assistance in this matter. If you have any questions regarding this well survey, please contact Crystal Leavey at 609-588-6154 or crystal.leavey@aptim.com.

Sincerely,

Crystal L. Leavey, LSRP
Project Manager II

Enclosure

Crystal L. Leavey, LSRP
APTIM
200 Horizon Center Boulevard
Trenton, NJ 08691
Phone: (609) 588-6154
Email: crystal.leavey@aptim.com
Fax: (609) 588-6300

WELL LOCATION

Street Address: CAVEN POINT ROAD
Municipality: Jersey City, Hudson County, NJ
Block/Lot #: 24306 / 2

POTABLE WELL INFORMATION FORM

Please complete the questions below by writing the answer in the space provided or by circling the most appropriate response, and return this form to us by May 29, 2020.

Date: _____

1. Indicate your relationship to this property. (Circle one)

   Property Owner Renter/Lessee Other (please explain)_____

Please provide your contact information/mailing address.

NAME: _____
ADDRESS: _____
PHONE #: _____ (home) _____ (work) _____ (cell)
Please circle the phone number above that you prefer we use to contact you.
E-MAIL ADDRESS: _____

If you are a renter or tenant, please provide the owner's contact information.

NAME: _____
ADDRESS: _____
PHONE #:_____ (home) _____ (work) _____ (cell)

2. Is any of the water used at the residence supplied by a private well? **YES NO**
   (<u>If NO, please stop here and return form</u>)

3. What is the depth of the well? _____ feet Check here if unknown:_____

4. Does the well supply water for any other residences? **YES NO Unknown**
   If **YES**, how many? _____

5. Do you use the well water for drinking and/or cooking? **YES NO**

   If **NO**, what is the source of your drinking/cooking water? _____

6. Do you use the well water for:
   bathing? **YES NO**
   washing clothes? **YES NO**
   lawn/garden/irrigation? **YES NO**

7. Has this well been tested recently? **YES NO**

If **YES**, please enclose a copy of the results if possible.

a) What date was it most recently tested? _____

b) Who tested the well water? _____

c) What was the well tested for? (Circle all that apply.)

Bacteria
Volatile Organics
Metals
Other (please explain): _____

d) Did the sampling detect any contaminants? **YES** **NO**

8. We would like to sample untreated water. Do you have any treatment system(s) on the well? **YES** **NO**

If **YES**,

a. What type of water treatment system(s) do you have? (Circle all that apply)

Softener
Iron removal
Sediment Filter
Carbon Filter
Turbidity removal
pH adjustment
Disinfection
Chlorinators
Acid neutralizer
Other: (please specify): _____

b. Can the treatment system be bypassed to collect an untreated water sample? **YES** **NO** **NOT SURE**

If **YES**, how can the system be bypassed? (Circle all that apply)

Outside spigot bypasses treatment
Faucet in basement
Faucet on holding tank
Treatment system can be shut off

If **NO**,

Is there an outside spigot from which we can take a sample? **YES** **NO**

Where is the spigot located? _____

9. If we cannot take an untreated sample from the outside spigot, would it be possible to schedule a meeting with someone at this location on a weekday to collect a water sample? **YES** **NO**

10. Please provide any other information that you feel would be helpful for us to know about your well.

WELL LOCATION

Street Address: CAVEN POINT ROAD

Municipality: Jersey City, Hudson County, NJ

Block/Lot #: 24306 / 2

APTIM
200 Horizon Center
Trenton, New Jersey 08691
Tel: 609-584-8900
Fax: 609.588.6300
www.aptim.com

May 19, 2020

WA RESIDENTIAL URBAN RENEWAL CO.LLC
100 CAVEN POINT RD.
JERSEY CITY, NJ 07305

Re: Potable Well Questionnaire
CAVEN POINT ROAD
Block 24306, Lot 1.01
Jersey City, Hudson County, NJ

To Whom It May Concern:

On behalf of our client, APTIM Environmental & Infrastructure LLC (APTIM) is conducting a door-to-door survey to identify nearby potable (drinking water and/or irrigation) wells in the Jersey City area. Our client is required to evaluate groundwater usage pursuant to the New Jersey Department of Environmental Protection (NJDEP) *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E-1.14(a)2 et seq.). If you have a private potable well at your property, we may ask to collect a sample at no cost to you. If sampling is conducted, a summary of the analytical test results will be provided.

Enclosed is a questionnaire that will help us determine if you have a private potable well at your property. We ask that you complete this form and return it no later than May 29, 2020. You return the form using your preferred method: mail (return envelope enclosed), email, or fax.

Upon receipt of your well questionnaire, APTIM will contact if you have a private potable well at your property. Any follow up, if required, will be conducted in June 2020.

Thank you for your assistance in this matter. If you have any questions regarding this well survey, please contact Crystal Leavey at 609-588-6154 or crystal.leavey@aptim.com.

Sincerely,

Crystal L. Leavey, LSRP
Project Manager II

Enclosure

Crystal L. Leavey, LSRP
APTIM
200 Horizon Center Boulevard
Trenton, NJ 08691
Phone: (609) 588-6154
Email: crystal.leavey@aptim.com
Fax: (609) 588-6300

WELL LOCATION

Street Address: CAVEN POINT ROAD
Municipality: Jersey City, Hudson County, NJ
Block/Lot #: 24306 / 1.01

POTABLE WELL INFORMATION FORM

Please complete the questions below by writing the answer in the space provided or by circling the most appropriate response, and return this form to us by May 29, 2020.

Date: _____

1. Indicate your relationship to this property. (Circle one)

   Property Owner Renter/Lessee Other (please explain)_____

Please provide your contact information/mailing address.

NAME: _____
ADDRESS: _____
PHONE #: _____ (home) _____ (work) _____ (cell)
Please circle the phone number above that you prefer we use to contact you.
E-MAIL ADDRESS: _____

If you are a renter or tenant, please provide the owner's contact information.

NAME: _____
ADDRESS: _____
PHONE #:_____ (home) _____ (work) _____ (cell)

2. Is any of the water used at the residence supplied by a private well? **YES NO**
   (<u>If NO, please stop here and return form</u>)

3. What is the depth of the well? _____ feet Check here if unknown:_____

4. Does the well supply water for any other residences? **YES NO Unknown**
   If **YES**, how many? _____

5. Do you use the well water for drinking and/or cooking? **YES NO**

   If **NO**, what is the source of your drinking/cooking water? _____

6. Do you use the well water for:
   bathing? **YES NO**
   washing clothes? **YES NO**
   lawn/garden/irrigation? **YES NO**

7. Has this well been tested recently? **YES NO**

If **YES**, please enclose a copy of the results if possible.

a) What date was it most recently tested? _____

b) Who tested the well water? _____

c) What was the well tested for? (Circle all that apply.)

Bacteria
Volatile Organics
Metals
Other (please explain): _____

d) Did the sampling detect any contaminants? **YES** **NO**

8. We would like to sample untreated water. Do you have any treatment system(s) on the well? **YES** **NO**

If **YES**,

a. What type of water treatment system(s) do you have? (Circle all that apply)

Softener
Iron removal
Sediment Filter
Carbon Filter
Turbidity removal
pH adjustment
Disinfection
Chlorinators
Acid neutralizer
Other: (please specify): _____

b. Can the treatment system be bypassed to collect an untreated water sample? **YES** **NO** **NOT SURE**

If **YES**, how can the system be bypassed? (Circle all that apply)

Outside spigot bypasses treatment
Faucet in basement
Faucet on holding tank
Treatment system can be shut off

If **NO**,

Is there an outside spigot from which we can take a sample? **YES** **NO**

Where is the spigot located? _____

9. If we cannot take an untreated sample from the outside spigot, would it be possible to schedule a meeting with someone at this location on a weekday to collect a water sample? **YES** **NO**

10. Please provide any other information that you feel would be helpful for us to know about your well.

WELL LOCATION

Street Address: CAVEN POINT ROAD

Municipality: Jersey City, Hudson County, NJ

Block/Lot #: 24306 / 1.01

APTIM
200 Horizon Center
Trenton, New Jersey 08691
Tel: 609-584-8900
Fax: 609.588.6300
www.aptim.com

May 19, 2020

14-16 BURMA ROAD, L.L.C.
14 BURMA ROAD
JERSEY CITY, NJ 07305

Re: Potable Well Questionnaire
14 BURMA ROAD
Block 24304, Lot 8
Jersey City, Hudson County, NJ

To Whom It May Concern:

On behalf of our client, APTIM Environmental & Infrastructure LLC (APTIM) is conducting a door-to-door survey to identify nearby potable (drinking water and/or irrigation) wells in the Jersey City area. Our client is required to evaluate groundwater usage pursuant to the New Jersey Department of Environmental Protection (NJDEP) *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E-1.14(a)2 et seq.). If you have a private potable well at your property, we may ask to collect a sample at no cost to you. If sampling is conducted, a summary of the analytical test results will be provided.

Enclosed is a questionnaire that will help us determine if you have a private potable well at your property. We ask that you complete this form and return it no later than May 29, 2020. You return the form using your preferred method: mail (return envelope enclosed), email, or fax.

Upon receipt of your well questionnaire, APTIM will contact if you have a private potable well at your property. Any follow up, if required, will be conducted in June 2020.

Thank you for your assistance in this matter. If you have any questions regarding this well survey, please contact Crystal Leavey at 609-588-6154 or crystal.leavey@aptim.com.

Sincerely,

Crystal L. Leavey, LSRP
Project Manager II

Enclosure

Crystal L. Leavey, LSRP
APTIM
200 Horizon Center Boulevard
Trenton, NJ 08691
Phone: (609) 588-6154
Email: crystal.leavey@aptim.com
Fax: (609) 588-6300

WELL LOCATION

Street Address: 14 BURMA ROAD
Municipality: Jersey City, Hudson County, NJ
Block/Lot #: 24304 / 8

POTABLE WELL INFORMATION FORM

Please complete the questions below by writing the answer in the space provided or by circling the most appropriate response, and return this form to us by May 29, 2020.

Date: _____

1. Indicate your relationship to this property. (Circle one)

   Property Owner Renter/Lessee Other (please explain)_____

Please provide your contact information/mailing address.

NAME: _____
ADDRESS: _____
PHONE #: _____ (home) _____ (work) _____ (cell)
Please circle the phone number above that you prefer we use to contact you.
E-MAIL ADDRESS: _____

If you are a renter or tenant, please provide the owner's contact information.

NAME: _____
ADDRESS: _____
PHONE #:_____ (home) _____ (work) _____ (cell)

2. Is any of the water used at the residence supplied by a private well? **YES NO**
   (<u>If NO, please stop here and return form</u>)

3. What is the depth of the well? _____ feet Check here if unknown:_____

4. Does the well supply water for any other residences? **YES NO Unknown**
   If **YES**, how many? _____

5. Do you use the well water for drinking and/or cooking? **YES NO**

   If **NO**, what is the source of your drinking/cooking water? _____

6. Do you use the well water for:
   bathing? **YES NO**
   washing clothes? **YES NO**
   lawn/garden/irrigation? **YES NO**

7. Has this well been tested recently? **YES NO**

If **YES**, please enclose a copy of the results if possible.

a) What date was it most recently tested? _____

b) Who tested the well water? _____

c) What was the well tested for? (Circle all that apply.)

Bacteria
Volatile Organics
Metals
Other (please explain): _____

d) Did the sampling detect any contaminants? **YES** **NO**

8. We would like to sample untreated water. Do you have any treatment system(s) on the well? **YES** **NO**

If **YES**,

a. What type of water treatment system(s) do you have? (Circle all that apply)

Softener
Iron removal
Sediment Filter
Carbon Filter
Turbidity removal
pH adjustment
Disinfection
Chlorinators
Acid neutralizer
Other: (please specify): _____

b. Can the treatment system be bypassed to collect an untreated water sample? **YES** **NO** **NOT SURE**

If **YES**, how can the system be bypassed? (Circle all that apply)

Outside spigot bypasses treatment
Faucet in basement
Faucet on holding tank
Treatment system can be shut off

If **NO**,

Is there an outside spigot from which we can take a sample? **YES** **NO**

Where is the spigot located? _____

9. If we cannot take an untreated sample from the outside spigot, would it be possible to schedule a meeting with someone at this location on a weekday to collect a water sample? **YES** **NO**

10. Please provide any other information that you feel would be helpful for us to know about your well.

WELL LOCATION

Street Address: 14 BURMA ROAD

Municipality: Jersey City, Hudson County, NJ

Block/Lot #: 24304 / 8

APTIM
200 Horizon Center
Trenton, New Jersey 08691
Tel: 609-584-8900
Fax: 609.588.6300
www.aptim.com

May 19, 2020

STATE OF N J DEPT OF ENV PROTECTION
36 WEST STATE ST
TRENTON NJ 08625

Re: Potable Well Questionnaire
185 THEODORE CONRAD DR.
Block 24304, Lot 1
Jersey City, Hudson County, NJ

To Whom It May Concern:

On behalf of our client, APTIM Environmental & Infrastructure LLC (APTIM) is conducting a door-to-door survey to identify nearby potable (drinking water and/or irrigation) wells in the Jersey City area. Our client is required to evaluate groundwater usage pursuant to the New Jersey Department of Environmental Protection (NJDEP) *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E-1.14(a)2 et seq.). If you have a private potable well at your property, we may ask to collect a sample at no cost to you. If sampling is conducted, a summary of the analytical test results will be provided.

Enclosed is a questionnaire that will help us determine if you have a private potable well at your property. We ask that you complete this form and return it no later than May 29, 2020. You return the form using your preferred method: mail (return envelope enclosed), email, or fax.

Upon receipt of your well questionnaire, APTIM will contact if you have a private potable well at your property. Any follow up, if required, will be conducted in June 2020.

Thank you for your assistance in this matter. If you have any questions regarding this well survey, please contact Crystal Leavey at 609-588-6154 or crystal.leavey@aptim.com.

Sincerely,

Crystal L. Leavey, LSRP
Project Manager II

Enclosure

Crystal L. Leavey, LSRP
APTIM
200 Horizon Center Boulevard
Trenton, NJ 08691
Phone: (609) 588-6154
Email: crystal.leavey@aptim.com
Fax: (609) 588-6300

WELL LOCATION

Street Address: 185 THEODORE CONRAD DR.
Municipality: Jersey City, Hudson County, NJ
Block/Lot #: 24304 / 1

POTABLE WELL INFORMATION FORM

Please complete the questions below by writing the answer in the space provided or by circling the most appropriate response, and return this form to us by May 29, 2020.

Date: _____

1. Indicate your relationship to this property. (Circle one)

   Property Owner Renter/Lessee Other (please explain)_____

Please provide your contact information/mailing address.

NAME: _____
ADDRESS: _____
PHONE #: _____ (home) _____ (work) _____ (cell)
Please circle the phone number above that you prefer we use to contact you.
E-MAIL ADDRESS: _____

If you are a renter or tenant, please provide the owner's contact information.

NAME: _____
ADDRESS: _____
PHONE #:_____ (home) _____ (work) _____ (cell)

2. Is any of the water used at the residence supplied by a private well? **YES NO**
   (<u>If NO, please stop here and return form</u>)

3. What is the depth of the well? _____ feet Check here if unknown:_____

4. Does the well supply water for any other residences? **YES NO Unknown**
   If **YES**, how many? _____

5. Do you use the well water for drinking and/or cooking? **YES NO**

   If **NO**, what is the source of your drinking/cooking water? _____

6. Do you use the well water for:
   bathing? **YES NO**
   washing clothes? **YES NO**
   lawn/garden/irrigation? **YES NO**

7. Has this well been tested recently? **YES NO**

If **YES**, please enclose a copy of the results if possible.

a) What date was it most recently tested? _____

b) Who tested the well water? _____

c) What was the well tested for? (Circle all that apply.)

Bacteria
Volatile Organics
Metals
Other (please explain): _____

d) Did the sampling detect any contaminants? **YES** **NO**

8. We would like to sample untreated water. Do you have any treatment system(s) on the well? **YES** **NO**

If **YES**,

a. What type of water treatment system(s) do you have? (Circle all that apply)

Softener
Iron removal
Sediment Filter
Carbon Filter
Turbidity removal
pH adjustment
Disinfection
Chlorinators
Acid neutralizer
Other: (please specify): _____

b. Can the treatment system be bypassed to collect an untreated water sample? **YES** **NO** **NOT SURE**

If **YES**, how can the system be bypassed? (Circle all that apply)

Outside spigot bypasses treatment
Faucet in basement
Faucet on holding tank
Treatment system can be shut off

If **NO**,

Is there an outside spigot from which we can take a sample? **YES** **NO**

Where is the spigot located? _____

9. If we cannot take an untreated sample from the outside spigot, would it be possible to schedule a meeting with someone at this location on a weekday to collect a water sample? **YES** **NO**

10. Please provide any other information that you feel would be helpful for us to know about your well.

WELL LOCATION

Street Address: 185 THEODORE CONRAD DR.

Municipality: Jersey City, Hudson County, NJ

Block/Lot #: 24304 / 1

APTIM
200 Horizon Center
Trenton, New Jersey 08691
Tel: 609-584-8900
Fax: 609.588.6300
www.aptim.com

May 19, 2020

LIBERTY STORAGE, L.L.C.
302 MORRIS PESIN DRIVE
JERSEY CITY, NJ 07305

Re: Potable Well Questionnaire
302 MORRIS PESIN DR.
Block 24304, Lot 7
Jersey City, Hudson County, NJ

To Whom It May Concern:

On behalf of our client, APTIM Environmental & Infrastructure LLC (APTIM) is conducting a door-to-door survey to identify nearby potable (drinking water and/or irrigation) wells in the Jersey City area. Our client is required to evaluate groundwater usage pursuant to the New Jersey Department of Environmental Protection (NJDEP) *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E-1.14(a)2 et seq.). If you have a private potable well at your property, we may ask to collect a sample at no cost to you. If sampling is conducted, a summary of the analytical test results will be provided.

Enclosed is a questionnaire that will help us determine if you have a private potable well at your property. We ask that you complete this form and return it no later than May 29, 2020. You return the form using your preferred method: mail (return envelope enclosed), email, or fax.

Upon receipt of your well questionnaire, APTIM will contact if you have a private potable well at your property. Any follow up, if required, will be conducted in June 2020.

Thank you for your assistance in this matter. If you have any questions regarding this well survey, please contact Crystal Leavey at 609-588-6154 or crystal.leavey@aptim.com.

Sincerely,

Crystal L. Leavey, LSRP
Project Manager II

Enclosure

Crystal L. Leavey, LSRP
APTIM
200 Horizon Center Boulevard
Trenton, NJ 08691
Phone: (609) 588-6154
Email: crystal.leavey@aptim.com
Fax: (609) 588-6300

WELL LOCATION

Street Address: 302 MORRIS PESIN DR.
Municipality: Jersey City, Hudson County, NJ
Block/Lot #: 24304 / 7

POTABLE WELL INFORMATION FORM

Please complete the questions below by writing the answer in the space provided or by circling the most appropriate response, and return this form to us by May 29, 2020.

Date: _____

1. Indicate your relationship to this property. (Circle one)

   Property Owner Renter/Lessee Other (please explain)_____

Please provide your contact information/mailing address.

NAME: _____
ADDRESS: _____
PHONE #: _____ (home) _____ (work) _____ (cell)
Please circle the phone number above that you prefer we use to contact you.
E-MAIL ADDRESS: _____

If you are a renter or tenant, please provide the owner's contact information.

NAME: _____
ADDRESS: _____
PHONE #:_____ (home) _____ (work) _____ (cell)

2. Is any of the water used at the residence supplied by a private well? **YES NO**
   (<u>If NO, please stop here and return form</u>)

3. What is the depth of the well? _____ feet Check here if unknown:_____

4. Does the well supply water for any other residences? **YES NO Unknown**
   If **YES**, how many? _____

5. Do you use the well water for drinking and/or cooking? **YES NO**

   If **NO**, what is the source of your drinking/cooking water? _____

6. Do you use the well water for:
   bathing? **YES NO**
   washing clothes? **YES NO**
   lawn/garden/irrigation? **YES NO**

7. Has this well been tested recently? **YES NO**

If **YES**, please enclose a copy of the results if possible.

a) What date was it most recently tested? _____

b) Who tested the well water? _____

c) What was the well tested for? (Circle all that apply.)

Bacteria
Volatile Organics
Metals
Other (please explain): _____

d) Did the sampling detect any contaminants? **YES** **NO**

8. We would like to sample untreated water. Do you have any treatment system(s) on the well? **YES** **NO**

If **YES**,

a. What type of water treatment system(s) do you have? (Circle all that apply)

Softener
Iron removal
Sediment Filter
Carbon Filter
Turbidity removal
pH adjustment
Disinfection
Chlorinators
Acid neutralizer
Other: (please specify): _____

b. Can the treatment system be bypassed to collect an untreated water sample? **YES** **NO** **NOT SURE**

If **YES**, how can the system be bypassed? (Circle all that apply)

Outside spigot bypasses treatment
Faucet in basement
Faucet on holding tank
Treatment system can be shut off

If **NO**,

Is there an outside spigot from which we can take a sample? **YES** **NO**

Where is the spigot located? _____

9. If we cannot take an untreated sample from the outside spigot, would it be possible to schedule a meeting with someone at this location on a weekday to collect a water sample? **YES** **NO**

10. Please provide any other information that you feel would be helpful for us to know about your well.

WELL LOCATION

Street Address: 302 MORRIS PESIN DR.

Municipality: Jersey City, Hudson County, NJ

Block/Lot #: 24304 / 7

New Jersey Department of Environmental Protection
Site Remediation and Waste Management Program

CLASSIFICATION EXCEPTION AREA / WELL RESTRICTION AREA (CEA/WRA) FACT SHEET FORM

Date Stamp
(For Department use only)

SECTION A. SITE INFORMATION

Site Name: Hudson County Chromate Site 63

Program Interest (PI) Number(s): G000008691

Case Tracking Number(s) for this submission: _____

This form must be attached to the Cover / Certification Form if not submitted through the Remedial Phase Report Online Service

1. Indicate the reason for submission of this form *(see instructions)*:

☒ New CEA ☐ Revise CEA ☐ Reestablish CEA ☐ Existing CEA with no changes
☐ CEA for historic fill ☐ CEA for Historically Applied Pesticides (HAP) ☐ CEA lift/removal

If you are submitting this form for an existing CEA provide the CEA Subject Item ID: _____

2. Indicate the type of ground water Remedial Action (RA):

☐ Natural ☐ Active ☒ Final RA not yet selected

3. Is this form being submitted with a Remedial Action Permit (RAP) Form (for Soil or Ground Water)? .... ☐ Yes ☒ No

SECTION B. CEA COMPONENT AND VAPOR INTRUSION INFORMATION

Name of document that includes the CEA Fate and Transport Description: RIRA/RAWP for Groundwater (AOC-10)

Date of document: 02/20/2022

1. Ground Water Classification: What is the ground water classification within the CEA as per N.J.A.C. 7:9C?

(Check all that apply)

☐ Class I-A
☐ Class I-PL Pinelands Protection Area
☐ Class I-PL Pinelands Preservation Area
☒ Class II-A
☐ Class III-A
☐ Class III-B

2. Contaminant Data: This CEA/WRA applies only to the contaminants listed below with concentrations above, or assumed to be above, numeric values established for the applicable classification area via the Ground Water Quality Standards (GWQS), N.J.A.C. 7:9C. Except for historic fill CEAs based on assumed ground water contamination, list the maximum contaminant value for all ground water data that could be representative of **current** conditions for any well or sampling point used to establish the CEA. See form instructions before entering data into the below table.

Contaminant	Concentration (1)	GWQS (2)	SWQS(3)	GWSL(4)
Chromium	1,650	70	NA	NA
Vanadium	1,090	60	NA	NA
Antimony	45.4	6	NA	NA
pH	11.26 SU	6.5-8.5 SU	NA	NA

Notes:
(1) Maximum concentration in Micrograms Per Liter
(2) New Jersey Ground Water Quality Standards, N.J.A.C. 7:9C-1.7 and 1.9(c)
(3) Surface Water Quality Standards, N.J.A.C. 7:9B - Applicable only where contaminants in the CEA may discharge to a surface water body.
(4) Current NJDEP Vapor Intrusion (VI) Ground Water Screening Levels (GWSL) available at http://www.nj.gov/dep/srp/guidance/vaporintrusion/

☐ Check if attaching the form Addendum to list additional contaminants and associated information.

3. CEA Boundaries and VI Pathway Status: Year of tax map used: 2006

Are there volatile contaminants in the CEA? ☐ Yes ☒ No

Is there LNAPL currently found in the CEA? ☐ Yes ☒ No

For CEA revisions only:

☐ Check if CEA Boundary has changed (*See instructions*)

☐ Check if Block and Lot numbers have changed (*See instructions*)

List the block(s) and lot(s) included in the areal extent of the CEA and check the appropriate boxes:

Block	Lot(s)	Check if off-site	Check if VI pathway was evaluated*	Check if VI pathway status is indeterminate*
21503	11	☐	☐	☐
24304	8	☒	☐	☐
24304	1	☒	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐

☐ Check if attaching an Addendum to list additional Blocks/Lots and associated information. *(see instructions)*

*Follow instructions for parcels where the vapor intrusion (VI) pathway was evaluated and the status is indeterminate.

Direction of ground water flow: SE (*If multiple water bearing zones exist within the CEA and/or there is no predominant flow direction, see instructions.*)

Vertical depth of CEA: 13.2 (ft bgs) **and** -3.2 (msl).

Horizontal extent of CEA: 74,062 Indicate units: ☐ acres or ☒ square feet

Name(s) of the affected Geologic Formation(s)/Unit(s) (*see instructions if multiple formations/units affected)*:

Salt Marsh and Estuarine Deposits

Narrative description of proposed CEA boundaries:

The proposed CEA/WRA extent encompasses MW-101, MW-103, MW-202, MW-301, and MW-302. The vertical depth of the CEA/WRA extends to Elevation (-3.2) and covers a horizontal extent of 74,062 square feet. The CEA/WRA will be in place for antimony, total chromium, vanadium, and pH based on exceedances of the GWQS.

4. Projected Term of CEA: *(Based on modeling/calculations in the fate and transport description)*

Proposed Duration in Years: _____ Anticipated Expiration Date: _____

or ☒ Indeterminate (*Review instructions before selecting* "Indeterminate" *for the CEA duration.*)

5. ATTACH AND/OR SUBMIT THE FOLLOWING: (*see instructions for additional information/requirements*)

Exhibit A: Site Location Maps – Based on USGS Quadrangle Map;

Exhibit B: CEA Map and Cross Section Figure – See N.J.A.C 7:26C- 7.3(c)1 and 2 and instructions regarding what is required to be included on the map and the cross-section figure.

Exhibit C: GIS Deliverables – CEA Boundary Extent Map. The CEA Boundary Extent Map shall be submitted via email to srpgis_cea@dep.nj.gov. (*See the instructions for detailed GIS deliverable requirements.)*

Identify format of CEA Boundary Extent Map being submitted: ..... ☒ Shape File ☐ CAD File ☐ N/A

If there is a CEA map already on NJ-GeoWeb, does it need to be revised? ..... ☐ Yes ☐ No ☒ N/A

SECTION C. CURRENT GROUND WATER USE DOCUMENTATION

1. Indicate the year of the most recent well search completed per N.J.A.C. 7:26E-1.14: 2021

2. If this Fact Sheet form is for a revised CEA or an existing CEA with no changes, have new wells been installed since the CEA was established? ☐ Yes ☐ No ☒ N/A

3. Are there any pumping wells (e.g., potable, industrial, irrigation or recovery wells) within the foot print of the CEA? ☐ Yes ☒ No

   If "Yes" list/attach list of the type and status of any pumping well(s) within CEA:

SECTION D. WELL RESTRICTION INFORMATION

Certain well restrictions relevant to potable ground water use, such as "Double Case Wells", "Sample Potable Wells", and "Evaluate Production Wells", are consistently set within the boundaries of all CEAs established by the NJDEP in Class I and II-A areas (*see instructions*).

1. Are there any other site-specific well restrictions relevant to potable ground water use that should be set within or near the boundaries of the proposed CEA? ☐ Yes ☒ No

   If "Yes", describe below any such site-specific well restrictions proposed for this CEA:

SECTION E. PUBLIC NOTIFICATION REQUIREMENTS

1. Indicate which of the following entities have been notified pursuant to N.J.A.C. 7:26C-7.3(d) and the dates each notification was sent. (*check all that apply*)

☒ Municipal and county clerk(s)	Dated mailed:	4/4/2022
☒ Local, county or regional health department(s)	Dated mailed:	4/4/2022
☒ Designated County Environmental Health Act agency (if applicable)	Dated mailed:	4/4/2022
☒ County Planning Board	Dated mailed:	4/4/2022
☐ Pinelands Commission (if applicable)	Dated mailed:	
☒ Owners of real property overlying CEA foot print	Dated mailed:	4/4/2022

2. **List of Names and Addresses** – List below and/or in an attachment, the names/addresses of all persons notified pursuant to N.J.A.C. 7:26C-7.3(d) based on the proposed CEA boundaries. If the site property owner differs from the person responsible for conducting the remediation, check here ☒ and enter the site owner's name and address first in the table below. *See instructions for more information regarding the address list.*

Entity or Owner Name	**Notification Address Used** If owner address differs from property address overlying CEA, add an " * " after the address.	**Blocks/Lots overlying CEA owned by this person** Block	Lot(s)
Nisan 12 Limited Liability Company	200 Theodore Conrad Dr., Jersey City, NJ 07305*	21503	11
NJDEP, Division of Parks and Forestry	Mail Code 401-04C, PO Box 420, Trenton, NJ 08625-0420*	24304	1
14-16 Burma, LLC	28-18 Steinway Street, 1st Floor, Astoria, NY 11103*	24304	8
Hudson County Regional Health Commission	595 County Avenue, Building 1, Secaucus, NJ 07094		
Hudson County Planning Board	830 Bergen Avenue, Suite 6A, Jersey City, NJ 07306		
Jersey City Clerk	280 Grove Street, Jersey City, NJ 07302		
Jersey City Department of Health and Human Services	Jackson Square Complex, 360 Martin Luther King Drive, Jersey City, NJ 07305		
Hudson County Clerk	257 Cornelison Ave 4th floor, Jersey City, NJ 07302		

ADDENDUM
Classification Exception Area / Well Restriction Area
Fact Sheet Form

Section B. CEA Component and Vapor Intrusion Information

1. **Contaminant Data** (continued)**:** This CEA/WRA applies only to the contaminants listed on page 1 and in the table below with concentrations above, or assumed to be above, numeric values established for the applicable classification area via the GWQS, N.J.A.C. 7:9C. Except for historic fill CEAs based on assumed ground water contamination, list below the maximum contaminant value for all ground water data that could be representative of **current** conditions for any well or sampling point used to establish the CEA. See form Instructions before entering data into the tables below.

Contaminant	Concentration (1)	GWQS (2)	SWQS(3)	VI GWSL(4)

Notes: (1) Maximum concentration in Micrograms Per Liter
(2) New Jersey Ground Water Quality Standards, N.J.A.C. 7:9C-1.7 and 1.9(c)
(3) Surface Water Quality Standards, N.J.A.C. 7:9B - Applicable only where contaminants in the CEA may discharge to a surface water body.
(4) Current NJDEP Vapor Intrusion (VI) Ground Water Screening Levels (GWSL)

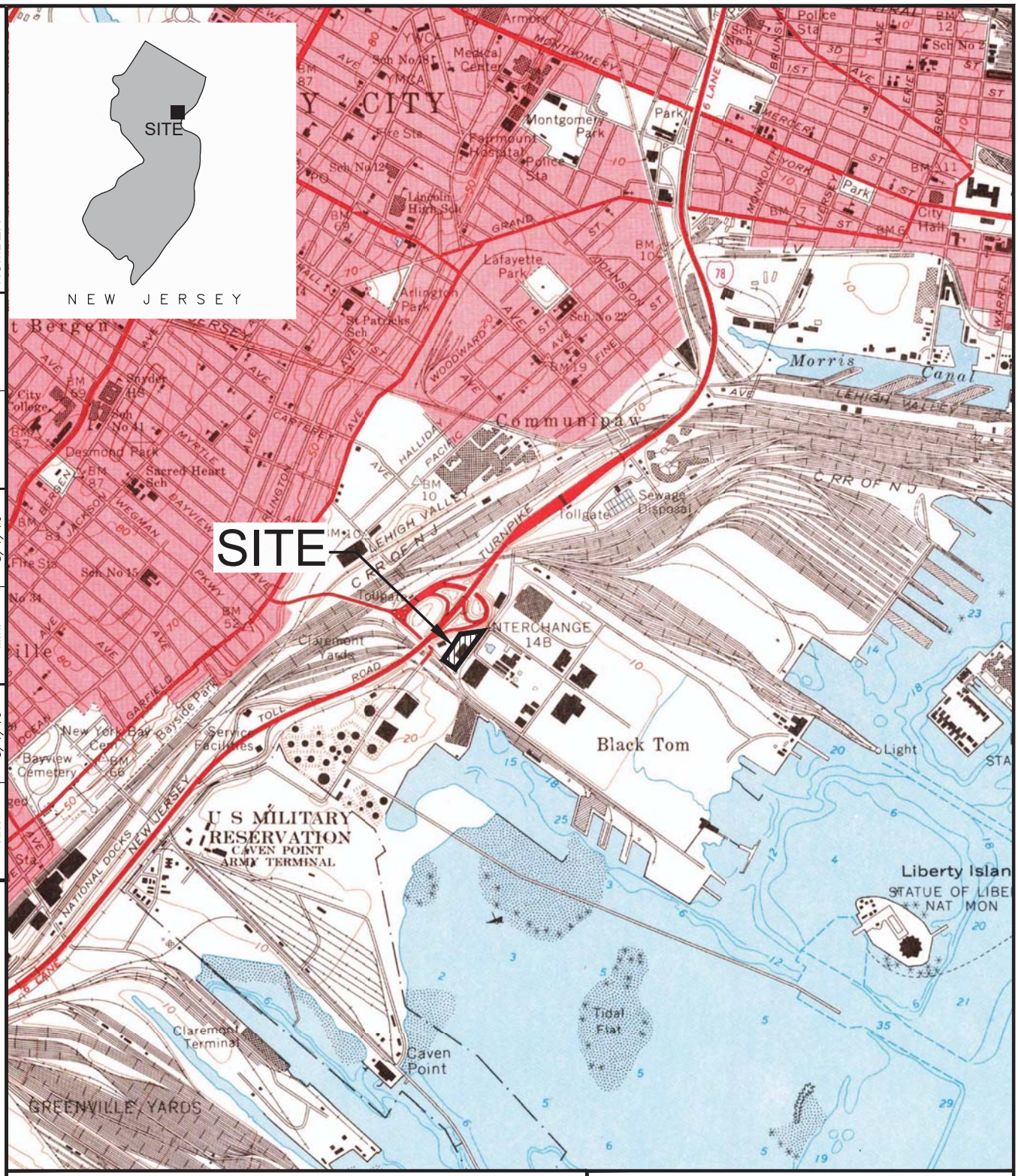
2. **CEA Boundaries and VI Pathway Status** (continued)**:** List additional parcels included in the CEA. Attach additional Addendum sheets if necessary to list all blocks and lots within the CEA.

For CEA revisions, check here if block and lot numbers have changed: ☐

Block	Lot(s)	Check if off-site	Check if VI pathway was evaluated*	Check if VI pathway status is indeterminate*
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐

* Follow instructions for parcels where the vapor intrusion (VI) pathway was evaluated and status is indeterminate.

DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
A.Y. 3/1/16	M.K. 3/1/16	-- --	146429-A1



N

SCALE

0 2000' 4000'

Site Coordinates:
Lat 40° 42' 03" N
Long 74° 04' 04" W

Sources:
JERSEY CITY, NJ USGS Topographic Quadrangle, 7.5-minute series, dated 1967

APTIM

Aptim Environmental & Infrastructure, LLC
200 Horizon Center
Trenton, New Jersey 08691

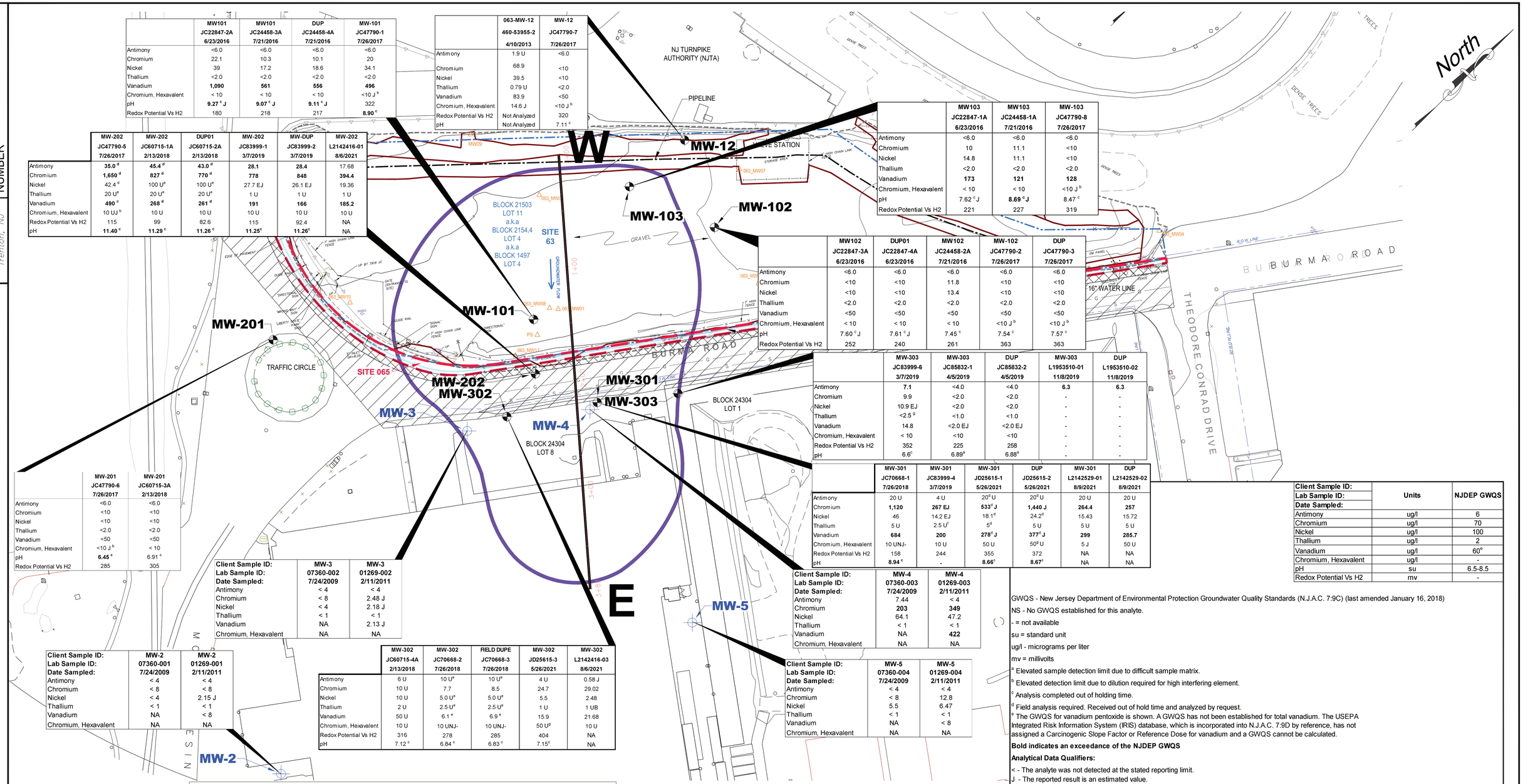
EXHIBIT A

SITE LOCATION MAP

SITE 63
1 BURMA ROAD
JERSEY CITY, NEW JERSEY

File: K:\Project\146429-PPG\146429-A1.dwg
Plot Date/Time: Apr 26, 2019 - 7:59am
Plotted By: Andrius.Yanavicius

OFFICE Trenton, NJ | DRAWING NUMBER 151136-D3



	MW101 JC22847-2A 6/23/2016	MW101 JC24458-3A 7/21/2016	DUP JC24458-4A 7/21/2016	MW-101 JC47790-1 7/26/2017
Antimony	<6.0	<6.0	<6.0	<6.0
Chromium	22.1	10.3	10.1	20
Nickel	39	17.2	18.6	34.1
Thallium	<2.0	<2.0	<2.0	<2.0
Vanadium	**1,090**	**561**	**556**	**496**
Chromium, Hexavalent	< 10	< 10	< 10	<10 J [b]
pH	**9.27** [c] **J**	**9.07** [c] **J**	**9.11** [c] **J**	322
Redox Potential Vs H2	180	218	217	**8.90** [c]

	063-MW-12 460-53955-2 4/10/2013	MW-12 JC47790-7 7/26/2017
Antimony	1.9 U	<6.0
Chromium	68.9	<10
Nickel	39.5	<10
Thallium	0.79 U	<2.0
Vanadium	83.9	<50
Chromium, Hexavalent	14.6 J	<10 J [b]
Redox Potential Vs H2	Not Analyzed	320
pH	Not Analyzed	7.11 [c]

	MW-202 JC47790-5 7/26/2017	MW-202 JC60715-1A 2/13/2018	DUP01 JC60715-2A 2/13/2018	MW-202 JC83999-1 3/7/2019	MW-DUP JC83999-2 3/7/2019	MW-202 L2142416-01 8/6/2021
Antimony	**35.0** [d]	**45.4** [d]	**43.0** [d]	**28.1**	**28.4**	17.68
Chromium	**1,650** [d]	**827** [d]	**770** [d]	**778**	**848**	**394.4**
Nickel	42.4 [d]	100 U [e]	100 U [e]	27.7 EJ	26.1 EJ	19.36
Thallium	20 U [e]	20 U [e]	20 U [e]	1 U	1 U	1 U
Vanadium	**490** [d]	**268** [d]	**261** [d]	**191**	**166**	**185.2**
Chromium, Hexavalent	10 UJ [b]	10 U	10 U	10 U	10 U	10 U
Redox Potential Vs H2	115	99	82.6	115	92.4	NA
pH	**11.40** [c]	**11.29** [c]	**11.26** [c]	**11.25** [c]	**11.26** [c]	NA

	MW103 JC22847-1A 6/23/2016	MW103 JC24458-1A 7/21/2016	MW-103 JC47790-8 7/26/2017
Antimony	<6.0	<6.0	<6.0
Chromium	10	11.1	<10
Nickel	14.8	11.1	<10
Thallium	<2.0	<2.0	<2.0
Vanadium	**173**	**121**	**128**
Chromium, Hexavalent	< 10	< 10	<10 J [b]
pH	7.62 [c] J	**8.69** [c] **J**	8.47 [c]
Redox Potential Vs H2	221	227	319

	MW102 JC22847-3A 6/23/2016	DUP01 JC22847-4A 6/23/2016	MW102 JC24458-2A 7/21/2016	MW-102 JC47790-2 7/26/2017	DUP JC47790-3 7/26/2017
Antimony	<6.0	<6.0	<6.0	<6.0	<6.0
Chromium	<10	<10	11.8	<10	<10
Nickel	<10	<10	13.4	<10	<10
Thallium	<2.0	<2.0	<2.0	<2.0	<2.0
Vanadium	<50	<50	<50	<50	<50
Chromium, Hexavalent	< 10	< 10	< 10	<10 J [b]	<10 J [b]
pH	7.60 [c] J	7.61 [c] J	7.45 [c]	7.54 [c]	7.57 [c]
Redox Potential Vs H2	252	240	261	363	363

	MW-303 JC83999-6 3/7/2019	MW-303 JC85832-1 4/5/2019	DUP JC85832-2 4/5/2019	MW-303 L1953510-01 11/8/2019	DUP L1953510-02 11/8/2019
Antimony	**7.1**	<4.0	<4.0	**6.3**	**6.3**
Chromium	9.9	<2.0	<2.0	-	-
Nickel	10.9 EJ	<2.0	<2.0	-	-
Thallium	<2.5 [g]	<1.0	<1.0	-	-
Vanadium	14.8	<2.0 EJ	<2.0 EJ	-	-
Chromium, Hexavalent	< 10	<10	<10	-	-
Redox Potential Vs H2	352	225	258	-	-
pH	6.6[c]	6.89[a]	6.88[a]	-	-

	MW-301 JC70668-1 7/26/2018	MW-301 JC83999-4 3/7/2019	MW-301 JD25615-1 5/26/2021	DUP JD25615-2 5/26/2021	MW-301 L2142529-01 8/9/2021	DUP L2142529-02 8/9/2021
Antimony	20 U	4 U	20[d] U	20[d] U	20 U	20 U
Chromium	**1,120**	**267 EJ**	**533[d] J**	**1,440 J**	**264.4**	**257**
Nickel	46	14.2 EJ	18.1[d]	24.2[d]	15.43	15.72
Thallium	5 U	2.5 U[f]	5[d]	5 U	5 U	5 U
Vanadium	**684**	**200**	**278[d] J**	**377[d] J**	**299**	**285.7**
Chromium, Hexavalent	10 UNJ-	10 U	50 U	50[d] U	5 J	50 U
Redox Potential Vs H2	158	244	355	372	NA	NA
pH	**8.94** [c]	-	**8.66**[c]	**8.67**[c]	NA	NA

	MW-4 07360-003 7/24/2009	MW-4 01269-003 2/11/2011
Antimony	7.44	< 4
Chromium	**203**	**349**
Nickel	64.1	47.2
Thallium	< 1	< 1
Vanadium	NA	**422**
Chromium, Hexavalent	NA	NA

	MW-5 07360-004 7/24/2009	MW-5 01269-004 2/11/2011
Antimony	< 4	< 4
Chromium	< 8	12.8
Nickel	5.5	6.47
Thallium	< 1	< 1
Vanadium	NA	< 8
Chromium, Hexavalent	NA	NA

	MW-201 JC47790-6 7/26/2017	MW-201 JC60715-3A 2/13/2018
Antimony	<6.0	<6.0
Chromium	<10	<10
Nickel	<10	<10
Thallium	<2.0	<2.0
Vanadium	<50	<50
Chromium, Hexavalent	<10 J [b]	< 10
pH	**6.45** [c]	6.91 [c]
Redox Potential Vs H2	285	305

Client Sample ID:	MW-3	MW-3
Lab Sample ID:	07360-002	01269-002
Date Sampled:	7/24/2009	2/11/2011
Antimony	< 4	< 4
Chromium	< 8	2.48 J
Nickel	< 4	2.18 J
Thallium	< 1	< 1
Vanadium	NA	2.13 J
Chromium, Hexavalent	NA	NA

Client Sample ID:	MW-2	MW-2
Lab Sample ID:	07360-001	01269-001
Date Sampled:	7/24/2009	2/11/2011
Antimony	< 4	< 4
Chromium	< 8	< 8
Nickel	< 4	2.15 J
Thallium	< 1	< 1
Vanadium	NA	< 8
Chromium, Hexavalent	NA	NA

	MW-302 JC60715-4A 2/13/2018	MW-302 JC70668-2 7/26/2018	FIELD DUPE JC70668-3 7/26/2018	MW-302 JD25615-3 5/26/2021	MW-302 L2142416-03 8/6/2021
Antimony	6 U	10 U[e]	10 U[e]	4 U	0.58 J
Chromium	10 U	7.7	8.5	24.7	29.02
Nickel	10 U	5.0 U[e]	5.0 U[e]	5.5	2.48
Thallium	2 U	2.5 U[e]	2.5 U[e]	1 U	1 UB
Vanadium	50 U	6.1 [e]	6.9 [e]	15.9	21.68
Chromium, Hexavalent	10 U	10 UNJ-	10 UNJ-	50 U[g]	10 U
Redox Potential Vs H2	316	278	285	404	NA
pH	7.12 [c]	6.84 [c]	6.83 [c]	7.15[c]	NA

Client Sample ID:	Units	NJDEP GWQS
Lab Sample ID:		
Date Sampled:		
Antimony	ug/l	6
Chromium	ug/l	70
Nickel	ug/l	100
Thallium	ug/l	2
Vanadium	ug/l	60[e]
Chromium, Hexavalent	ug/l	-
pH	su	6.5-8.5
Redox Potential Vs H2	mv	-

GWQS - New Jersey Department of Environmental Protection Groundwater Quality Standards (N.J.A.C. 7:9C) (last amended January 16, 2018)

NS - No GWQS established for this analyte.

- = not available

su = standard unit

ug/l - micrograms per liter

mv = millivolts

[a] Elevated sample detection limit due to difficult sample matrix.

[b] Elevated detection limit due to dilution required for high interfering element.

[c] Analysis completed out of holding time.

[d] Field analysis required. Received out of hold time and analyzed by request.

[e] The GWQS for vanadium pentoxide is shown. A GWQS has not been established for total vanadium. The USEPA Integrated Risk Information System (IRIS) database, which is incorporated into N.J.A.C. 7:9D by reference, has not assigned a Carcinogenic Slope Factor or Reference Dose for vanadium and a GWQS cannot be calculated.

Bold indicates an exceedance of the NJDEP GWQS

Analytical Data Qualifiers:

< - The analyte was not detected at the stated reporting limit.

J - The reported result is an estimated value.

NJ- = Matrix spike recovery below control limits; result is an estimated value with potential low bias.

Legend

- EXTENT OF CEA (CLASSIFICATION EXCEPTION AREA) BOUNDARY
- W — E CEA CROSS-SECTION LINE (SEE EXHIBIT B-2)
- EXISTING MONITORING WELL (SITE 63)
- HISTORICAL MONITORING WELL (14 BURMA RD)
- ABANDONED MONITORING WELL (SITE 63)
- FINAL GRADE CONTOUR (IN FEET)
- SITE 63 BOUNDARY
- EXCAVATION BOUNDARY
- 16" WATER LINE
- G GAS LINE
- S STORMWATER LINE
- PIPELINE CENTERLINE
- a.k.a. ALSO KNOWN AS
- TRAFFIC SIGNAL
- RAILROAD SIGNAL
- SHRUB
- ROCK
- HYDRANT
- UNCERTAIN HYDRANT
- MANHOLE
- UNCERTAIN MANHOLE
- CATCH BASIN
- UTILITY BOX
- UNCERTAIN CATCH BASIN
- UTILITY POLE & POLE NUMBER
- STREET LIGHT
- GUY ANCHOR
- ELECTRIC DEVICE
- FLAG POLE
- ATHLETIC POLE
- SITE 65 BOUNDARY
- SUPPLEMENTAL REMEDIATION AREA
- RELEASED AREA
- GROUNDWATER FLOW (11/2019)
- POST
- ROAD SIGN
- U.S. MAIL DROP
- MONUMENT
- UNCERTAIN OBJECT
- DTM POINT
- TREE
- FENCE
- RETAINING WALL

Notes:

1. IN A NOVEMBER 2012 REMEDIAL INVESTIGATION REPORT / REMEDIAL ACTION WORK PLAN / REMEDIAL ACTION REPORT, PREPARED BY EWMA, LLC FOR 14-16 BURMA ROAD, LLC FOR INVESTIGATIONS RELATED TO SRP ID #G000062419, IT WAS REPORTED THAT MONITORING WELL MW-1 COULD NOT BE LOCATED FOR SAMPLING IN JUNE 2009 AND FEBRUARY 2011.
2. THE MONITORING WELLS ASSOCIATED WITH SRP ID #G000062419 WERE ABANDONED IN JANUARY 2013.
3. HORIZONTAL EXTENT OF CONTAMINATION BASED ON POST-SOIL REMEDIATION GROUNDWATER ANALYTICAL DATA. PRE-2016 GROUNDWATER ANALYTICAL DATA FROM MONITORING WELLS ASSOCIATED WITH HCC SITE 63 HAS BEEN EXCLUDED.

Sources:

LIMITS OF HDPE LINER, SUBSURFACE FABRIFORM DRAINAGE STRUCTURE & STORM SEWER LOCATIONS TAKEN FROM IT CORPORATION'S DRAWING TITLED "EXTENT OF HDPE LINER", FILE NAME: GP12-017, DRAWING NUMBER 7-2, DATED JANUARY 11, 2000.

BASEMAP INFORMATION SUPPLIED BY C.T. MALE ASSOC.'S DRAWING TITLED "TOPOGRAPHIC SURVEY, SITES 63-65", DRAWING NUMBER 10.352, DATED JUNE 20,2010

LOT & BLOCK INFORMATION SOURCE:
1) HUDSON COUNTY DEPARTMENT OF PLANNING, HUDSON COUNTY, GIS SHAPEFILE, JANUARY 1,2007
2) NEW JERSEY GEOGRAPHIC INFORMATION NETWORK, MOD IV TAX PARCEL SEARCH DATABASE.

NATURAL GAS PIPELINE AND EXCAVATION EXTENT LOCATIONS APPROXIMATED USING GPS DATA COLLECTED BY CB&I AND SHOULD NOT BE CONSTRUCTED AS SURVEYOR QUALITY AS-BUILT OF PIPELINE OR EXCAVATION EXTENTS.

Scale in Feet: 40 20 0 40

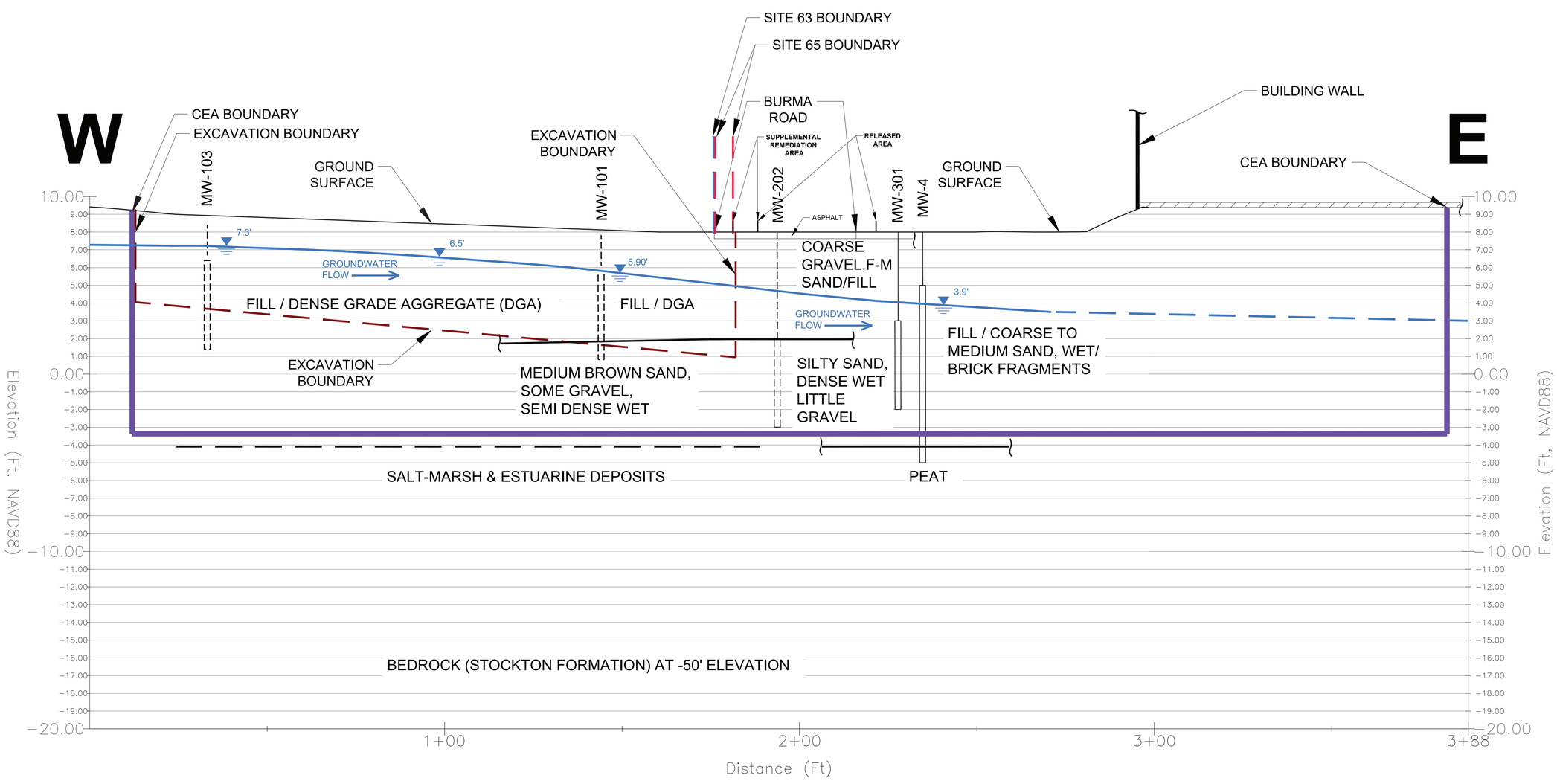
APTIM Environmental & Infrastructure, LLC
200 Horizon Center Boulevard Suite 250
Trenton, New Jersey 08691

DESIGNED BY:	PPG HUDSON COUNTY, NEW JERSEY	
A.Y.		
DRAWN BY: A.Y.	EXHIBIT B-1 CLASSIFICATION EXCEPTION AREA BOUNDARY SITE 63 JERSEY CITY, NEW JERSEY	
CHECKED BY: C. Leavey		
APPROVED BY: C. Leavey	DATE: 12/2/21	SCALE: AS SHOWN
	DRAWING NO. 151136-D3	SHEET NO. 1 OF 1

File: K:\Project\144Gg-RPO\sites 63_and 65\151136-03.dwg
Plot Date/Time: Dec 02, 2021 - 3:56pm
Plotted By: Andrew Schmucker

OFFICE Trenton, NJ

DRAWING NUMBER 151136-D3



VERTICAL SCALE 5X
0 3 6 FEET

HORIZONTAL SCALE
0 15 30 FEET

LEGEND:

- MW-103 — MONITORING WELL WITH SCREEN INTERVAL (DASHED WERE PROJECTED INTO PROFILE)
- GROUND WATER TABLE (11/2019) (DASHED WERE INFERRED)
- LITHOLOGICAL BOUNDARY (DASHED WERE INFERRED)
- EXTENT OF CEA BOUNDARY
- EXCAVATION BOUNDARY
- BUILDING SLAB

NOTE:

MW-4 (PERMIT #E200907845) WAS ASSOCIATED WITH SITE REMEDIATION PROGRAM INTEREST G000062419 (14-16 BURMA ROAD, LLC). MONITORING WELL MW-4 WAS ABANDONED BY OTHERS IN JANUARY 2013.

APTIM Environmental & Infrastructure, LLC
200 Horizon Center Boulevard Suite 250
Trenton, New Jersey 08691

DESIGNED BY: A.Y.	PPG HUDSON COUNTY, NEW JERSEY
DRAWN BY: A.Y.	EXHIBIT B-2 CEA CROSS-SECTION MAP SITE 63 JERSEY CITY, NEW JERSEY
CHECKED BY: C. Leavey	

APPROVED BY:	DATE:	SCALE:	DRAWING NO.	SHEET NO.
C. Leavey	12/2/21	AS SHOWN	151136-D3	

Case Name: Hudson County Chromate Site 63
PI #: G000008691
Activity #: RPC910001

Case Inventory Document Version 1.5.1 02/04/21

IMPORTANT: *1) The CID must be FINALIZED prior to upload. After the CID has been populated, click the Validate for Upload button and follow the instructions.*
2) You MUST SAVE after finalizing, and before upload. Click the Enable for Editing button after uploading to edit again.

AOC ID	AOC Type	AOC Description	Confirmed Contamination	Exclude AOC from Billing	AOC Status Achieved	Status Achieved Date	Incident Communication Center #s Managed in Case	NJDEP ID	Contaminated Media	Contaminants of Concern	Additional Contaminants of Concern	Additional Contaminants of Concern	Applicable Remediation Standard	Exposure Route
AOC 1a to 1u	Storage tank and appurtenance - Above ground storage tank	Three 500-gallon, two 175-gal, nine 12,000-gallon, and 7 "Large" former ASTs	Yes		PA/SI	03/10/2017			Soil	EPH + PAHs	VO		Remediation Standards	Ingestion/Dermal
AOC 2	Storage tank and appurtenance - Rail car	Former Railroad Spur	Undetermined		PA/SI	03/10/2017							Remediation Standards	Ingestion/Dermal
AOC 3a	Drainage system and area - Drainage swale and culvert	Western Drainage Ditch	Undetermined		PA/SI	03/10/2017								
AOC 3b	Drainage system and area - Drainage swale and culvert	Eastern Drainage Ditch	Yes		NFA-AOC DEP Issued (Unrestricted Use)	01/30/2018			Soil	Metals			AOC Specific ARS and Remediation Standards	Ingestion/Dermal
AOC 4	Drainage system and area - Storm sewer collection system	Catch Basin	Undetermined		PA/SI	03/10/2017								
AOC 5	Discharge and disposal area - Historic fill material area/other fill area	Historic Fill	Yes		SI	03/10/2017			Soil	Metals + PAHs			Remediation Standards	Ingestion/Dermal
AOC 6a to 6b	Other areas of concern - Hazardous substance storage or handling area	Former Interior Hazardous Material Storage Areas and Unidentified Drum	Undetermined		PA/SI	03/10/2017								
AOC 7a to 7b	Other areas of concern - Discolored area or spill area	Staining in southern and southeastern portions of site	Undetermined		PA/SI	03/10/2017								
AOC 8	Storage tank and appurtenance - Loading and unloading area	Former Loading Area	Undetermined		NFA-AOC DEP Issued (Unrestricted Use)	01/30/2018							Remediation Standards	Ingestion/Dermal
AOC 9	Discharge and disposal area - Historic fill material area/other fill area	Soils contaminated with Chromate Chemical Production Waste	Yes		NFA-AOC DEP Issued (Unrestricted Use)	01/30/2018			Soil	Metals			AOC Specific ARS and Remediation Standards	Ingestion/Dermal

Case Name: Hudson County Chromate Site 63
PI #: G000008691
Activity #: RPC910001

Case Inventory Document Version 1.5.1 02/04/21

AOC ID	AOC Type	Additional Exposure Route	RA Type	Additional RA Type	Was an Order of Magnitude Evaluation Conducted?	Activity
AOC 1a to 1u	Storage tank and appurtenance - Above ground storage tank				No	**AOC associated with Baldwin Oils & Commodities Company (SRP PI G000002333)** PA/SI - Initial cursory site investigation activities completed by TRC Environmental in 2011. RI - Subsequent waste classification sampling conducted by CB&I in 2013 revealed elevated petroleum hydrocarbons and chlorinated VO contamination. RA - Surficial impacted soil excavated as part of RA for AOC-9. Post-excavation soils not collected/analyzed for petroleum, PAH, or VO constituents.
AOC 2	Storage tank and appurtenance - Rail car					**AOC associated with Baldwin Oils & Commodities Company (SRP PI G000002333)** PA/SI - Initial cursory site investigation activities completed by TRC Environmental in 2011. RA - Surficial impacted soil excavated as part of RA for AOC-9. Post-excavation soils not collected/analyzed for PAHs, PCBs, and non-CCPW related TAL metals.
AOC 3a	Drainage system and area - Drainage swale and culvert					**AOC associated with Baldwin Oils & Commodities Company (SRP PI G000002333)** PA/SI - Initial cursory site investigation activities completed by TRC Environmental in 2011.
AOC 3b	Drainage system and area - Drainage swale and culvert		Excavation		No	PA/SI - Initial cursory site investigation activities completed by TRC Environmental in 2011. April 2014 - May 2015: Excavation of the remainder of the CCPW-related contamination at the site was completed (see AOC 9). This AOC is encompassed by the larger AOC-9. January 2018 - Unrestricted Use Consent Judgment Compliance Letter for AOCs for CCPW and CCPW-related Metals Only in Soil issued by NJDEP
AOC 4	Drainage system and area - Storm sewer collection system					**AOC associated with Baldwin Oils & Commodities Company (SRP PI G000002333)** PA/SI - Initial cursory site investigation activities completed by TRC Environmental in 2011. April 2014 - May 2015: Excavation of the remainder of the CCPW-related contamination at the site was completed (see AOC 9). This AOC is encompassed by the larger AOC-9.
AOC 5	Discharge and disposal area - Historic fill material area/other fill area				No	**AOC associated with Baldwin Oils & Commodities Company (SRP PI G000002333)** PA/SI - Initial cursory site investigation activities completed by TRC Environmental in 2011. RI - Subsequent waste classification sampling conducted by CB&I in 2013 revealed elevated metals and PAH contamination. RA - Surficial impacted soil excavated as part of RA for AOC-9. Post-excavation soil samples not collected/analyzed for historic fill related contaminants
AOC 6a to 6b	Other areas of concern - Hazardous substance storage or handling area					**AOC associated with Baldwin Oils & Commodities Company (SRP PI G000002333)** PA/SI - Initial cursory site investigation activities completed by TRC Environmental in 2011.
AOC 7a to 7b	Other areas of concern - Discolored area or spill area					**AOC associated with Baldwin Oils & Commodities Company (SRP PI G000002333)** PA/SI - Initial cursory site investigation activities completed by TRC Environmental in 2011.
AOC 8	Storage tank and appurtenance - Loading and unloading area		Excavation			PA/SI - Initial cursory site investigation activities completed by TRC Environmental in 2011. April 2014 - May 2015: Excavation of the remainder of the CCPW-related contamination at the site was completed (see AOC 9). This AOC is encompassed by the larger AOC-9. January 2018 - Unrestricted Use Consent Judgment Compliance Letter for AOCs for CCPW and CCPW-related Metals Only in Soil issued by NJDEP
AOC 9	Discharge and disposal area - Historic fill material area/other fill area		Excavation		No	1987: NJDEP collected soil samples and identified elevated chromium. Interim RA - September 1998 - August 1999: Onsite building demolished, chrome-impacted soils within foundation footprint hauled away. Soil sampling to collect preliminary information for planning the remediation activities. 20 soil borings advanced and 109 analytical samples were collected. Former building footprint covered with IRM consisting of PVC liner and gravel. 2011: Cursory site investigation completed by TRC Environmental with oversight by Tetratech that included the advancement of 9 soil borings, installation/sampling of four temporary well points, and sampling of monitoring wells installed by others. A total of 34 soil samples and 8 groundwater samples were collected. RI 2011: TetraTech advanced 62 soil borings and collected 328 soil samples for analysis. 2012: Additional RI work performed by CB&I. Scope included 7 soil borings and collection and analysis of 36 samples. August/September 2013: Design Boring Investigation as extension of RAWP was performed by CB&I and included 64 soil borings and collection and analysis of 370 soil samples. April to August 2013: Soil excavation began for a natural gas pipeline within the western boundary of the Site by Spectra Energy. Approximately 3,400 tons of soil was transported offsite for disposal. On July 26, 2013, a truckload of the stockpiled soil triggered disposal facility portal monitor radiation detection alarm. The source of the radioactive material was determined to be thorium series radionuclides (Thorium-232 and daughters) located in low level radioactive waste slag. Slag material identified drummed separately for disposal. April 2014 - May 2015: Excavation of the remainder of the CCPW-related contamination at the site was completed including continual monitoring for radioactive material. ±24,360 tons of non-hazardous fill material removed for disposal. ±7,353 tons of hazardous fill material removed for disposal. Soil samples collected indicate that CCPW-impacted soil and fill materials have been removed from the Site. Issuance of a NFA equivalent is appropriate at this time. January 2018 - Unrestricted Use Consent Judgment Compliance Letter for AOCs for CCPW and CCPW-related Metals Only in Soil issued by NJDEP

Case Name: Hudson County Chromate Site 63
PI #: G000008691
Activity #: RPC910001

Case Inventory Document Version 1.5.1 02/04/21

IMPORTANT: ***1) The CID must be FINALIZED prior to upload. After the CID has been populated, click the Validate for Upload button and follow the instructions.***
2) You MUST SAVE after finalizing, and before upload. Click the Enable for Editing button after uploading to edit again.

AOC ID	AOC Type	AOC Description	Confirmed Contamination	Exclude AOC from Billing	AOC Status Achieved	Status Achieved Date	Incident Communication Center #s Managed in Case	NJDEP ID	Contaminated Media	Contaminants of Concern	Additional Contaminants of Concern	Additional Contaminants of Concern	Applicable Remediation Standard	Exposure Route
AOC 10	Environmental media - Media Ground water	Groundwater contaminated from contact with Chromate Chemical Production Waste	Yes		RAW	10/25/2021			Ground Water	Metals			Remediation Standards	Ground Water
AOC 11	Other areas of concern - Other discharge area	Dumping	No		PA/SI	03/10/2017								

Case Name: Hudson County Chromate Site 63
PI #: G000008691
Activity #: RPC910001

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AOC ID	AOC Type	Additional Exposure Route	RA Type	Additional RA Type	Was an Order of Magnitude Evaluation Conducted?	Activity
AOC 10	Environmental media - Media Ground water		Monitored Natural Attenuation		No	February 2013: Groundwater RIR submitted. 2016-2019 : MW-101, MW-102, MW-103, MW-201, MW-202, MW-301, MW-302, MW-303 installed. Multiple rounds of groundwater sampling completed for hexavalent chromium, total chromium and CCPW-related metals analysis. May 2021: monitoring well MW-301 and MW-302 sampled for hexavalent chromium, total chromium and CCPW-related metals; Targeted contaminants were not reported at concentrations in excess of the MDL and/or respective GWQS except for total chromium and vanadium; total chromium result in MW-302 rejected following data validation (see report). July 2021: MW-202 and MW-301 redeveloped August 2021: monitoring well MW-202, MW-301, and MW-302 sampled for hexavalent chromium, total chromium and CCPW-related metals; antimony, total chromium and vanadium in excess of GWQS in MW-202; total chromium and vanadium in excess of GWQS in MW-302 and MW-301 February 2022: RIRA/RAWP submitted to document pre- and post-soil remediation groundwater investigations and propose remedial action strategy for antimony, total chromium, vanadium, and pH exceedances of GWQS.
AOC 11	Other areas of concern - Other discharge area					**AOC associated with Baldwin Oils & Commodities Company (SRP PI G000002333)** PA/SI - Initial cursory site investigation activities completed by TRC Environmental in 2011. RA - Surficial impacted soil excavated as part of RA for AOC-9. Post-excavation soil samples not collected/analyzed to demonstrate absence of non-CCPW related contamination.

1.0 Introduction

In 1990, PPG and the New Jersey Department of Environmental Protection (NJDEP) entered into an Administrative Consent Order (ACO) to investigate and remediate locations where chromate chemical production waste (CCPW) or CCPW-impacted materials related to former PPG operations may be present. On June 26, 2009, NJDEP, PPG, and the City of Jersey City entered into a Partial Consent Judgment Concerning the PPG Sites (JCO) with the purpose of remediating the soils and sources of contamination at the Hudson County Chromate (HCC) sites as expeditiously as possible. The goal of the JCO was to complete the investigation and remediation of the PPG sites within five years, in accordance with a judicially enforceable master schedule. Priority for the remedial activities was given to residential locations where the CCPW and CCPW-impacted materials were present. The provisions of the original ACO remain in effect with the JCO taking precedence where there were conflicts between the two documents.

Previous groundwater investigations, as documented in the Tetra Tech, Inc. (Tetra Tech) April 2013 *Remedial Investigation Report* (RIR), identified CCPW-related metals in excess of the NJDEP Groundwater Quality Standards (GWQS) for Class II-A aquifers (N.J.A.C. 7:9C, last amended June 2020) in shallow groundwater beneath Site 63 in Jersey City, Hudson County, New Jersey (the Site) in areas where soil remediation activities have subsequently been completed.

On January 9, 2018, the NJDEP, PPG, the City of Jersey City, and the Jersey City Municipal Utility Authority (JCMUA) entered into a Settlement Agreement that established the boundaries of HCC Site 65, which is adjacent to Site 63. The Settlement Agreement memorialized PPG's responsibilities for the remediation of CCPW soil contamination encountered during subsurface utility work involving the 16-inch municipal water line located in Site 65. The settlement agreement also established PPG's responsibility for groundwater that is emanating Site 63.

Pursuant to the Settlement Agreement, the Parties involved agreed that the soils remedy to be implemented by PPG for the Site 65 would be a restricted use remedy consisting of the following:

- The asphalt road surface covering Site 65 functioning as an engineering control to prevent direct contact exposure; the maintenance of which shall be borne by the City.
- A Notice in Lieu of Deed Notice filed because contaminants were left in place in Site 65 soils that exceed NJDEP soil remediation criteria and/or standards.

Repairs, alterations and/or replacement to the 16-inch water line, in whole or part, within the boundaries of the Site will be managed by the JCMUA as a linear construction project governed by the NJDEP's Linear Construction guidance pursuant to the terms and conditions of the Settlement Agreement. Periodic monitoring, inspections, and reporting with respect to the integrity of the asphalt road surface will be conducted by PPG.

Aptim Environmental & Infrastructure, LLC (APTIM) has prepared this Remedial Investigation Report Addendum / Remedial Action Work Plan (RIRA/RAWP) on behalf of PPG to document groundwater investigations that were completed following the remediation of chromium-impacted soils at the Site.

1.1 Objectives

The objectives of this RIRA/RAWP are to:

- Memorialize the investigations completed relative to groundwater
- Propose the establishment of a Classification Exception Area / Well Restriction Area (CEA/WRA) to restrict groundwater usage beneath the property
- Propose the establishment of a Remedial Action Permit for Groundwater as the remedial action for groundwater until such time as CCPW and CCPW-related metals concentrations are in compliance with the GWQS.

1.2 Report Organization

This RIRA/RAWP is organized as follows:

- Section 1 provides the introduction and objectives of the RIRA/RAWP;
- Section 2 provides background information and the findings of historical groundwater investigations;
- Section 3 provides the environmental setting of the site and surrounding area;
- Section 4 identifies the applicable remediation standards/criteria and defines the areas of concern (AOCs) associated with the site;
- Section 5 provides a description of the recent groundwater remedial investigation (RI) activities;
- Section 6 provides a description of the data validation process;
- Section 7 describes the results of a receptor evaluation;
- Section 8 provides conclusions and recommendations relative to groundwater;
- Section 9 provides the proposed remedial action for groundwater; and
- Section 10 provides a list of references cited in the preparation of the RIRA/RAWP.

Supplemental information is presented in the Appendices.

2.0 Background Information

2.1 Site Description

The former Baldwin Oil facility is located at 1 Burma Road in Jersey City, New Jersey (Figure 1). The Site was identified as a Non-Residential HCC site by the NJDEP and is designated as HCC Site 63 in the July 19, 1990 ACO between the NJDEP and PPG. The NJDEP Site Remediation Program (SRP) Program Interest (PI) number for Site 63 is G000008691. (Note: There is also a NJDEP SRP PI number G000002333 at the Site that is associated with remediation related to the former Baldwin Oil facility operations.)

Site 63 is identified by the New Jersey Department of the Treasury Division of Taxation as Block 21503, Lot 11 (January 2016). Site 63 is bordered by Site 65 and Burma Road to the east, Morris Pesin Drive to the south, and property owned by the New Jersey Turnpike Authority (NJTA) to the north and west. Site 63 occupies approximately 2.11 acres (Figure 2).

The majority of the Site is currently used by the owner for temporary parking of tractor trailers but had formerly been occupied by a light industrial building that was razed as part of earlier remedial efforts in 1998-1999 and subsequently remediated. An underground natural-gas pipeline was installed by Spectra Energy Transmission Services (Spectra) along the western and northern boundary of Site 63 in April and May 2013. A valve station building was also installed by Spectra in May 2013. The pipeline and valve station became fully functional in November 2013 (Figure 2).

2.2 Pre-Soil Remediation Groundwater Remedial Investigation

2.2.1 Tetra Tech, Inc. (2011-2013)

APTIM reviewed available historical reports prepared for the Site, including an April 2013 RIR prepared by Tetra Tech. The results of Tetra Tech's investigations as they relate specifically to groundwater are discussed below. Relevant table, figure, and drawing excerpts from the April 2013 RIR are provided in Appendix A-1.

Tetra Tech completed a remedial investigation at the Site the latter half of 2011 in accordance with a NJDEP-approved Remedial Investigation Work Plan (RIWP) that was prepared by AECOM Environmental, Inc. (AECOM). The objective of the RI was to identify potential CCPW impact to groundwater, the vertical and horizontal extent of the impacts, and confirm groundwater flow direction at the Site. The results of the groundwater investigation were documented in Tetra Tech's April 2013 RIR and are summarized below. Relevant table, figure, and drawing excerpts are provided in Appendix A-1.

Seven monitoring wells were installed in the surficial aquifer during the Tetra Tech's initial RI in July 2011: 063_MW01, 063_MW02, 063_MW03, 063_MW04, 063_MW05, 063_MW06, and 063_MW07. Three monitoring wells (063_MW08, 063_MW10, and 063_MW11) were installed in December 2012 and January 2013 at the Site during the delineation RI. Monitoring wells 063_MW-10 and 063_MW-11 were installed to delineate the lateral extent of impacts, while monitoring well 063_MW-08 was installed for vertical delineation at the Site. Monitoring wells coincided with soil boring locations where soil

samples were also collected, except for 063_MW11, which was moved (with NJDEP approval) approximately 12 feet to the west to prevent road closures during well sampling. Monitoring well information (Tetra Tech, 2013) is presented in Table 2-2-1.

Table 2-2-1
Historical Monitoring Well Characteristics
Non-Residential Chromate Chemical Production Waste Site
Former Baldwin Oil Facility, Hudson County Chromate Site 63
1 Burma Road
Jersey City, New Jersey
Program Interest Number: G000008691

Monitoring Well ID	Northing	Easting	Top of Casing Elevation (feet NAVD88)	Screen Length (feet)	Top of Screened Interval Elevation (feet NAVD88)	Bottom of Screened Interval Elevation (feet NAVD88)
063_MW01	680335.76	618853.89	10.05	5	8.05	3.05
063_MW02	680482.47	612364.8	11.09	5	6.09	1.09
063_MW03	680620.65	612469.8	10.33	5	5.33	0.33
063_MW04	680768.35	621582.68	10.11	5	5.11	0.11
063_MW05	680279.34	612050.3	8.71	5	6.71	1.71
063_MW06	680397.35	612173.77	11.00	5	9	4
063_MW07	680542.35	612279.46	11.59	5	6.59	1.59
063_MW08	680330.37	612242.15	9.54	5	-4.46	-9.46
063_MW10	680212.13	612118.15	7.92	5	5.92	0.92
063_MW11	680283.26	612256.4	10.17	5	6.17	1.17

Notes:
NAVD88 - North American Vertical Datum, 1988

Tetra Tech reported in their April 2013 RIR that proposed monitoring wells 063_MW09 and 063_MW12 and the associated borings were not installed due to access issues with the NJTA during their investigation. These monitoring wells (identified as MW-09 and MW-12) were installed and sampled following the submission of the April 2013 RIR, but prior to soil remediation activities (see Section 2.2.3).

Tetra Tech performed three groundwater sampling events as part of their remedial investigation. Information regarding each sampling event, including the monitoring wells sampled and laboratory analyses, is presented in Table 2-2-2.

Table 2-2-2
Groundwater Sampling Events (Tetra Tech)
Non-Residential Chromate Chemical Production Waste Site
Former Baldwin Oil Facility, Hudson County Chromate Site 63
1 Burma Road
Jersey City, New Jersey
Program Interest Number: G000008691

Sampling Date	Monitoring Well ID		Analytical Parameters	
August 8, 2011	063_MW01 063_MW03 063_MW05		Antimony Chromium Nickel Thallium	Vanadium Hexavalent Chromium pH ORP(Eh)
September 16, 2011	063_MW01 063_MW02 063_MW03 063_MW04	063_MW05 063_MW06 063_MW07	Antimony Chromium Nickel Thallium	Vanadium Hexavalent Chromium pH ORP(Eh)
February 6, 2013 - February 8, 2013	063_MW01 063_MW02 063_MW03 063_MW04 063_MW05	063_MW06 063_MW07 063_MW08 063_MW10 063_MW11	Antimony Chromium Nickel Thallium	Vanadium Hexavalent Chromium pH ORP(Eh)

ORP(Eh) – Oxidation/Reduction Potential

2.2.1.1 Groundwater Sampling - 2011

Groundwater samples were collected using low-flow purging and sampling techniques. Prior to sampling, synoptic groundwater level measurements were collected from existing and new monitoring wells to provide data for calculating groundwater elevations and flow direction. Depth to water information is presented on Tetra Tech's Table 3 in Appendix A-1. Groundwater contour figures prepared by Tetra Tech are presented as Figure 5 in Appendix A-1.

The results of Tetra Tech's 2011 RI for groundwater are summarized as follows:

- Chromium was detected in six of the seven wells sampled (063_MW01, 063_MW02, 063_MW03, 063_MW05, 063_MW06, and 063_MW07). Samples from three wells (063_MW01, 063_MW06, and 063_MW07) contained concentrations that exceeded the NJDEP GWQS (70 micrograms per liter (ug/l)), with 063_MW01 exhibiting the highest chromium concentration (5,160 ug/l). Figure 10 in Appendix A-1 provides an iso-concentration map with the chromium results.
- Hexavalent chromium was detected in three of the seven wells sampled (063_MW01, 063_MW03, and 063_MW06). The location of the sample with the highest hexavalent chromium concentration (21.8 ug/l) was 063_MW01. There is no NJDEP GWQS for hexavalent chromium.

- Three of the seven wells sampled had detectable antimony concentrations (063_MW01, 063_MW04, and 063_MW05). One sample had a concentration higher than the NJDEP GWQS (6 ug/l). The location of the sample with the highest antimony concentration (estimated at 16.8 ug/l) is 063_MW01. Figure 11 in Appendix A-1 provides an iso-concentration map with the antimony results.
- Nickel was detected in six of the seven wells sampled (063_MW01, 063_MW03, 063_MW04, 063_MW05, 063_MW06, and 063_MW07). Samples from two wells (063_MW01 and 063_MW06) contained nickel concentrations that exceeded the GWQS (100 ug/l). The location of the sample with the highest nickel concentration (318 ug/l) was 063_MW01. Figure 12 in Appendix A-1 provides an iso-concentration map with the nickel results.
- Four of the seven wells sampled had detectable vanadium concentrations (063_MW01, 063_MW02, 063_MW06, and 063_MW07). Samples from three wells (063_MW01, 063_MW06, and 063_MW07) had concentrations that exceeded the NJDEP GWQS (60 ug/l). The location of the sample with the highest vanadium concentration (1,870 ug/l) was 063_MW01. There were no samples for which the method detection limit exceeded the GWQS. Figure 13 in Appendix A-1 provides an iso-concentration map with the vanadium results.
- Thallium was not detected in any of the seven wells sampled by Tetra Tech; however, the method detection limit for these groundwater samples exceeded the GWQS.

Tetra Tech concluded that, based on the results of the initial and delineation RIs, the extent of groundwater contamination has been delineated vertically; however, the horizontal extent of groundwater contamination has not been fully delineated. CCPW-related groundwater contamination was present in shallow groundwater only, as evidenced by the groundwater sample results from the deep well (063_MW08). The horizontal extent of groundwater contamination downgradient of 063_MW10 and 063_MW11 and upgradient of 063_MW06 and 063_MW07 had not been fully delineated.

2.2.1.2 Groundwater Sampling - 2013

Groundwater samples were collected using low-flow purging and sampling techniques. Prior to sampling, synoptic groundwater level measurements were collected from existing and new monitoring wells to provide data for calculating groundwater elevations and flow direction. Depth to water information is presented on Tetra Tech's Table 3 in Appendix A-1. Groundwater contour figures prepared by Tetra Tech are presented as Figure 5A in Appendix A-1.

During the site investigation, a water line, 29x45-inch embedded cylinder pipe sanitary sewer/storm sewer, and 12-inch steel iron pipe gas line were identified along Burma Road as part of the underground utility survey. Based on the two groundwater gauging events, groundwater does not appear to be infiltrating and following the preferential pathways of underground utilities. Groundwater was measured at 3.41 feet below ground surface (bgs) to 3.70 feet bgs in 063_MW01 to 5.80 feet bgs in 063_MW08 and the depth of the storm water/sewer in that area is between 2 and 3 feet bgs. Groundwater depth may vary seasonally. The water line and gas line do not have direct discharge to surface water. The combined sanitary/storm sewer discharges to the local wastewater treatment facility.

The results of Tetra Tech's 2013 RI for groundwater are summarized as follows:

- Chromium was detected in eight of the ten groundwater samples collected (063_MW01, 063_MW02, 063_MW03, 063_MW06, 063_MW07, 063_MW08, 063_MW10, and 063_MW11). Samples from five wells (063_MW01, 063_MW06, 063_MW07, 063_MW10, and 063_MW11) contained chromium concentrations that exceeded the NJDEP GWQS (70 ug/L). The location of the sample with the highest chromium concentration (51,400 ug/L) is 063_MW11. Figure 15 in Appendix A-1 provides an iso-concentration map with the chromium results.
- Hexavalent chromium was detected in seven of the ten wells sampled (063_MW01, 063_MW02,063_MW03, 063_MW05, 063_MW06, 063_MW07, and 063_MW08). The location of the sample with the highest hexavalent chromium concentration (270 ug/L) is 063_MW01. There is no NJDEP GWQS for hexavalent chromium. Figure 16 in Appendix A-1 provides the iso-concentration map with the hexavalent chromium results.
- Antimony was detected in five of the ten groundwater samples collected (063_MW01, 063_MW04, 063_MW06, 063_MW10, and 063_MW11). Samples from two wells (063_MW01 and 063_MW11) contained antimony concentrations that exceeded the NJDEP GWQS (6 ug/L). The location of the sample with the highest antimony concentration (283 ug/L) is 063_MW11. Figure 17 in Appendix A-1 provides an iso-concentration map with the antimony results.
- Nickel was detected in seven of the ten wells sampled (063_MW01, 063_MW04, 063_MW06, 063_MW07, 063_MW08, 063_MW10, and 063_MW11). Samples from three wells contained nickel concentrations that exceeded the GWQS of 100 ug/L (063_MW01, 063_MW06, and 063_MW11). The location of the sample with the highest nickel concentration (272 ug/L) was 063_MW01. Figure 18 in Appendix A-1 provides the iso-concentration map with the nickel results.
- Eight of the ten wells sampled had detectable vanadium concentrations (063_MW01, 063_MW02, 063_MW03, 063_MW04, 063_MW06, 063_MW07, 063_MW10, and 063_MW11). Samples from four wells had vanadium concentrations that exceeded the NJDEP GWQS of 60 ug/L (063_MW01, 063_MW06, 063_MW10, and 063_MW11). The location of the sample with the highest vanadium concentration (1,620 ug/L) was 063_MW01. Figure 19 in Appendix A-1 provides the iso-concentration map with the vanadium results.
- Thallium was not detected in the ten wells sampled during the delineation investigation. The non-detected concentrations of thallium were below the GWQS of 2 ug/L.

The results of the initial RI and delineation RI were used to determine the horizontal and vertical extent of groundwater contamination. Based on initial RI groundwater results from well 063_MW01, which contained high concentrations of chromium, antimony, nickel, and vanadium, three monitoring wells were installed during the delineation RI (063_MW08, 063_MW10, and 063_MW11) to delineate the extent of contamination downgradient from 063_MW01. Well 063_MW08 was installed to delineate the vertical extent of groundwater contamination and 063_MW10 and 063_MW11 were installed to delineate the horizontal extent of groundwater contamination.

The highest concentrations of chromium and antimony were found in samples from monitoring well 063_MW11. The highest concentrations of hexavalent chromium, nickel, and vanadium were found in samples from monitoring well 063_MW01. Chromium concentrations that exceeded the NJDEP GWQS were found in five wells. Hexavalent chromium was not detected or detected at very low levels in the wells sampled during the initial RI; however, the hexavalent chromium concentration in 063_MW01 was approximately 12 times greater in the delineation RI than in the initial RI. Also, hexavalent chromium

concentrations in 063_MW03, 063_MW05, 063_MW06, and 063_MW07 were slightly higher in the delineation RI samples.

The site completely inundated during Hurricane Sandy in October 2012, between when the initial RI and delineation RI groundwater samples were collected. In their April 2013 RIR, Tetra Tech indicated the flooding may have affected the hexavalent chromium concentrations in the delineation investigation samples.

Antimony concentrations that exceeded the GWQS were found in two wells. Nickel concentrations that exceeded the GWQS were found in three wells. Vanadium concentrations that exceeded the GWQS were found in five wells. Thallium was not detected in groundwater samples from Sites 063 and 065.

Based on the results of the initial and delineation RIs, the extent of groundwater contamination was vertically delineated by Tetra Tech, as evidenced by the groundwater sample results from the deep well (063_MW08). Groundwater contamination is present in shallow groundwater only. The horizontal extent of groundwater contamination downgradient of 063_MW10 and 063_MW11 and upgradient of 063_MW06 and 063_MW07 was not fully delineated by Tetra Tech.

Based on the two groundwater gauging events, Tetra Tech stated that groundwater did not appear to be infiltrating and following the preferential pathways of underground utilities. Groundwater was measured at 3.41 feet bgs to 3.70 feet bgs in 063_MW01 to 5.80 feet bgs in 063_MW08 and the depth of the storm water/sewer in that area is between 2 and 3 feet bgs.

2.2.2 14-16 Burma Road Property

APTIM reviewed a November 2012 *Remedial Investigation Report/Remedial Action Report/Remedial Action Work Plan*, prepared by EWMA, LLC (EWMA) on behalf of 14-16 Burma Road, LLC for Program Interest G000062419 (EWMA Report). Remediation activities were completed at this site due to the presence of petroleum hydrocarbon and historic fill impacted soils between 2001 and 2012. Relevant excerpts from the EWMA Report are provided as Appendix A-2.

Groundwater data collected in 2009 and 2011 from the permanent monitoring wells at 14-16 Burma Road (Figure 2 in Appendix A-2) using volume-averaged purging and sampling revealed elevated levels of antimony, total chromium, and vanadium in monitoring well MW-4 (see Figure 5 and Figure 7 in Appendix A-2). Groundwater flow direction was calculated by EWMA to predominantly flow to the south across the 14-16 Burma Road property (see Figures 6 and Figure 8 in Appendix A-2).

Antimony was reported in MW-4 at a concentration of 7.44 ug/l in July 2009 and non-detect (<4.0) in February 2011. Total chromium was reported in MW-4 at a concentration of 203 ug/l in July 2009 and 349 ug/l in February 2011. Vanadium was reported in MW-4 at a concentration of 422 ug/l in February 2011. Vanadium was not analyzed during the July 2009 event. Nickel and thallium that were analyzed by EWMA as part of the Target Analyte List metals suite were not reported in excess of the MDL and/or the GWQS in MW-4. Antimony, nickel, thallium, vanadium, and total chromium were not reported in excess of the GWQS in EWMA wells MW-2, MW-3, and MW-5. Groundwater samples collected by EWMA were not analyzed for hexavalent chromium. Data for the 2009 and 2011 groundwater sampling events completed by EWMA are shown on Table 6 through Table 9 in Appendix A-2.

The monitoring wells used during EWMA's investigation of the 14-16 Burma Road property were abandoned following the closure of the Licensed Site Remediation Professional-led investigations that

resulted in the recordation of a Deed Notice and issuance of a Remedial Action Permit for Soil and the establishment of a CEA/WRA for historic fill-related groundwater contamination.

2.2.3 APTIM (2013)

In March 2013, Shaw Environmental, Inc. (Shaw), a predecessor to APTIM, subcontracted with a New Jersey licensed well driller to advance monitoring wells MW-09 and MW-12 in order to complete groundwater delineation in the western portion of the Site. The locations of the monitoring wells are depicted on Figure 2. Each monitoring well was advanced using hollow-stem auger methods to a depth of 10 feet below grade. The wells were constructed using 2-inch diameter, schedule 40 polyvinyl chloride casing with five feet of 0.010-inch slot well screen and sufficient riser to reach surface grade.

The annular space of the borehole for each well was filled with No. 1 Morie filter pack to one foot above the top of the well screen. A one-foot bentonite seal was then installed on top of the filter pack. Each well was secured with a locking watertight gripper plug. MW-09 was completed with a flush-mount road box set in a concrete pad and MW-12 was finished with a stick-up steel outer casing. The wells were installed in accordance with N.J.A.C. 7:9D. Permits, records, logs, and *Monitoring Well Certification Form A - As-Built Certifications* for each monitoring well are included in Appendix B. Monitoring wells MW-09 and MW-12 were not surveyed immediately following installation in 2013. MW-09 was abandoned in 2014 (see Table 2-3) prior to soil excavation activities.

Monitoring well MW-12 remained onsite through soil remediation activities and was used for post-soil remediation groundwater monitoring (see Section 5.0). This well was surveyed in 2016 in accordance with standard industry practices and the *Monitoring Well Certification Form B - Location Certifications* is included in Appendix B.

The monitoring wells were sampled on April 10, 2013. Synoptic gauging of the groundwater monitoring well network was not completed. Groundwater samples were submitted to TestAmerica Laboratories, Inc. (TestAmerica, NJDEP Certification 12028) for the following analyses:

- Hexavalent chromium using USEPA SW 846 Methods 3060A and 7196A
- Total chromium, antimony, nickel, thallium, and vanadium using USEPA SW 846 Methods 3050B/ 6020

Targeted contaminants were not reported at concentrations in excess of the method detection limit (MDL) and/or respective GWQS during the April 2013 sampling event in MW-09 and MW-12. The results of the groundwater sample analyses are provided on Table 1. The laboratory report is provided in Appendix E.

2.3 Monitoring Well Abandonment

As discussed in the June 2017 Remedial Action Report (RAR), monitoring wells were abandoned before or during soil excavation activities in accordance with the NJDEP's *Sealing of Abandoned Wells Technical Requirements* (N.J.A.C. 7:9D), as shown in Table 2-3-1 below. A New Jersey Licensed Well Driller was onsite on November 5, 2014 (when the areas where monitoring wells 063_MW03, 063_MW06, and 063_MW09 were located were being excavated) to observe the absence of the monitoring wells. Subsequent to the visit, the well driller filed a Well Decommissioning Report for each well stating no materials used to seal the well. This is indicative of the absence of a

monitoring well to seal. Monitoring well MW-12 was not abandoned as part of the soil remediation activities and remains onsite.

Table 2-3-1
Historical Monitoring Well Abandonment
Non-Residential Chromate Chemical Production Waste Site
Former Baldwin Oil Facility, Hudson County Chromate Site 63
1 Burma Road
Jersey City, New Jersey
Program Interest Number: G000008691

Monitoring Well ID	Northing	Easting	Abandonment Date
063_MW01	680335.76	618853.89	4/22/2014
063_MW02	680482.47	612364.8	4/22/2014
063_MW03	680620.65	612469.8	11/05/2014
063_MW04	680768.35	621582.68	4/22/2014
063_MW05	680279.34	612050.3	3/21/2013
063_MW06	680397.35	612173.77	11/05/2014
063_MW07	680542.35	612279.46	3/21/2013
063_MW07R	680526	612288	4/22/2014
063_MW08	680330.37	612242.15	4/22/2014
MW-09	680283	612256	11/05/2014
063_MW10	680212.13	612118.15	1/07/2015
063_MW11	680283.26	612256.4	4/22/2014

3.0 Environmental Setting

Land use, soils, geology, topography, surface water, hydrogeology, and well search results for the Project Area and surrounding area of Jersey City are summarized in the subsections below.

3.1 Topography

The United States Geological Survey Jersey City, New Jersey topographic quadrangle map presents the regional topography for the Project Area. Site 63 has little topographic relief, with ground surface elevations ranging from El 6.4 to 15.6 feet North American Vertical Datum, 1988 (NAVD88). The topography rises approximately 20 to 40 feet in elevation within several hundred yards of the Project Area.

3.2 Geology

A description of the regional and project area geology is presented below.

3.2.1 Regional Geology

The regional geology includes unconsolidated sediments of Recent and Pleistocene age. According to the New Jersey Geologic Survey, these sediments include alluvial, estuarine, eolian (windblown), and glacial lacustrine deposits, as well as glacial till of late Wisconsin age. The Triassic age bedrock of the Newark Group (Lockatong and Stockton formations) throughout the region is comprised of non-marine sedimentary rocks, consisting mainly of sandstone, mudstone, and conglomerate. A diabase sill (i.e., the Palisades Sill) intruded into the Lockatong formation approximately 200 million years ago.

3.2.2 Site Geology

Prior to Site remedial activities the Site geology consisted of shallow layers of historic fill materials including soil, gravel, slag, and coal/ash including layers impacted by CCPW for approximately 0 to 5 feet bgs which overlie additional fill materials. Underlying these fill materials are native soils consisting of meadow mat, silts, clays, and sand at depths of approximately 8 to 10 feet bgs (0 feet mean sea level). Laboratory analytical results demonstrated that the fill materials not only were impacted by CCPW, polycyclic aromatic hydrocarbons, and metals, but also by chlorinated organic compounds and petroleum hydrocarbons from historic Site activities.

Site 63 lies within the glaciated section of the Piedmont Physiographic Province of the Appalachian Highlands, along the eastern edge of the Newark Basin; the area is underlain by formations of Recent and Pleistocene sediments. The Triassic age bedrock throughout the region is composed of non-marine sedimentary rocks, consisting mainly of sandstone, mudstone, and conglomerate. The Triassic Newark Supergroup consists of non-marine sedimentary rocks with diabase intrusives. It is common for the Triassic Newark Supergroup to exhibit a slight dip to the northwest with local warping and occasional faulting. The formations generally strike northeast to southwest and dip between 10 to 20 degrees northwest. The Newark Supergroup can be divided into three formations based on lithology: 1) the Stockton Formation, 2) the Lockatong Formation, and 3) the Passaic Formation (AECOM, 2011).

The Stockton Formation beneath Site 63 has a gray to reddish-brown sandstone, combined with conglomerate, siltstone, and shale. The siltstone may be gray, green, or purple and fossiliferous. The Stockton Formation is about 850 feet thick beneath Site 63. The Lockatong Formation, located west of the Site, consists of fossil-rich, thinly laminated to thickly bedded, gray to black siltstone and shale. A diabase sill of Lower Jurassic Age intrudes the Lockatong Formation west of the Site within Jersey City. The Passaic Formation is located west of the Site, and it is the thickest formation (about 10,000 feet). The Passaic consists of reddish-brown mudstones, shale, siltstone, and sandstone with interbedded conglomeritic sandstones along the basin margins (AECOM, 2011).

Following the completion of soil excavation activities at the site, clean backfill material was imported and placed throughout the site, as discussed in the June 2017 RAR. Clean backfill material placed at the site consisted of the following:

- Spectra Excavation Limits
  - Sand - Amboy Aggregates of South Amboy, New Jersey
  - Stone Fines - Tilcon Mount Hope Quarry in Wharton, New Jersey
  - Stone Crushing Screenings - Tilcon Mount Hope Quarry in Wharton, New Jersey
- Main Excavation Limits
  - Stone Fines - Weldon Material Inc.'s Fanwood Crushed Stone Company Quarry in Watchung, New Jersey
  - Stone Crushing Screenings - Weldon Material Inc.'s Fanwood Crushed Stone Company Quarry in Watchung, New Jersey

3.3 Regional Hydrology

Groundwater occurs regionally in the following hydrogeologic zones: the fill, meadow mat and the unconsolidated overburden soils; and the bedrock. A summary of the groundwater flow in these formations is included below (AECOM, 2016):

- **Fill (Shallow Water-Bearing Zone):** Groundwater in the fill is typically encountered within 10 feet bgs. In general, shallow groundwater flow patterns represent a subdued version of land surface topography. Variations from this can be attributed to heterogeneities in the fill. For instance, tightly compacted dredged sediments would be expected to restrict water flow much more than construction debris. Subsurface infrastructure (e.g., basements, drains, sheet pile, utility corridors, etc.) would also affect groundwater flow patterns. Groundwater elevations in the shallow fill can also be influenced by recharge events.
- **Overburden (Intermediate and Deep Water-Bearing Zones) and Meadow Mat:** Groundwater flow in the overburden is controlled by hydraulic conductivity, or flow through the connected porous spaces in the soil matrix. Groundwater flows horizontally in these soils but may be influenced by local recharge and discharge zones (i.e., surface water bodies and drainage divides). Meadow mat is a dense matrix of organic material and fine-grained soils; the hydraulic conductivity of the meadow mat is expected to be three or more orders-of-magnitude less than the underlying overburden.
- **Bedrock (Bedrock Water-Bearing Zone):** Well yields from bedrock in the Project Area have been reported to range from several gallons to several hundred gallons per minute, with yields generally decreasing with depth. Groundwater in the bedrock formations occurs under both unconfined and confined conditions, primarily within secondary porosity due to fractures and joints. The Palisades Sill is understood to be a no flow boundary and has low

permeability. In general, groundwater flow in bedrock is a very small fraction of the total groundwater flux through the area.

3.4 Site Hydrogeology

Like the regional hydrogeology, groundwater at the Project Area occurs in several hydrogeologic zones; however, only the shallow fill zone has been impacted by CCPW-related contamination in the area of the Site.

Site 63 is underlain by fill materials including soil, silty sand, sand, angular fill materials, ash, and other fill materials. Prior to PPG's soil excavation associated with AOC 3b, AOC 8, and AOC 9, fill materials containing CCPW occurred within the upper 0 to 5 feet bgs. The fill material extends downward to depths of 7 to 10 feet bgs. The fill material is underlain by in-place soils including meadow mat, clay, silt, and sand.

Following soil remediation activities, the site was backfilled with sand, stone fines, and/or screenings from stone crushing operations. Groundwater occurs within at depths ranging from 0.17 to 5.62 feet below top of well casing with groundwater table elevations range from approximately 3.4 to 8.27 feet NAVD88. General groundwater flow direction has been calculated to generally flow to the south and southeast in the area of the Site.

Groundwater contamination identified in monitoring wells surrounding the boundary of the Site is associated with and emanating from HCC Site 63. Post-soil remedial action monitoring wells associated with the HCC Site 63 groundwater RI are shown on Figure 2.

4.0 Identification of Applicable Remedial Standards/Criteria and AOCs

4.1 Remediation Standards/Criteria

The RIs described in this RIRA/RAWP were performed in accordance with the following regulatory requirements and NJDEP Guidance.

- N.J.A.C. 7:26C – *Administrative Requirements for the Remediation of Contaminated Sites*, last amended August 6, 2018.
- N.J.A.C. 7:26E – *Technical Requirements for Site Remediation*, last amended August 6, 2018.
- NJDEP *Field Sampling Procedures Manual*, dated August 2005 (last updated April 2011).
- NJDEP *Technical Guidance for the Attainment of Remediation Standards and Site-Specific Criteria*, dated July 2021.
- N.J.A.C. 7:9C - NJDEP Groundwater Quality Standards, last amended June 1, 2020.
- NJDEP *Ground Water Technical Guidance: Site Investigation Remedial Investigation Remedial Action Performance Monitoring*, April 2012.
- NJDEP Administrative Consent Order, July 19, 1990.
- JCO between NJDEP, PPG, and the City of Jersey City, June 26, 2009.

4.2 Groundwater Quality Standards

Groundwater analytical results are compared to the NJDEP GWQS in accordance with N.J.A.C. 7:9C and groundwater impacts are delineated to the appropriate GWQS. Currently there is no GWQS for hexavalent chromium; therefore, hexavalent chromium impacts are evaluated in comparison to the GWQS for chromium of 70 µg/L. The groundwater remediation standards/criteria for this Site include the values shown on Table 4-2.

Table 4-2
Groundwater Quality Standards
Non-Residential Chromate Chemical Production Waste Site
Former Baldwin Oil Facility, Hudson County Chromate Site 63
1 Burma Road
Jersey City, New Jersey
Program Interest Number: G000008691

Analyte	GWQS (N.J.A.C. 7:9C) (µg/L)
Total chromium	70
Hexavalent chromium	70
Antimony	6
Nickel	100
Thallium	2
Vanadium	60[1]

PPG is not legally responsible for any other chemicals exceeding NJDEP GWQS that may be present at the Site. This RIRA/RAWP addresses only chromium and CCPW-related constituents. Other chemicals above NJDEP GWQS may be co-located and co-mingled with chromium and CCPW-related constituents, but this RIRA/RAWP will not pursue delineation of these chemicals to achieve current NJDEP GWQS.

4.3 AOCs

The case inventory document summarizes the presence of 11 AOCs for the Site. This RIRA/RAWP addresses AOC 10 (Groundwater). AOCs associated with the site are summarized in Table 4-3 and are differentiated between PPG responsibilities and Baldwin Oils & Commodities Company (SRP PI G000002333) responsibilities:

[1] The GWQS for vanadium pentoxide is shown. A GWQS has not been established for total vanadium. The USEPA Integrated Risk Information System database, which is incorporated into N.J.A.C. 7:9D by reference, has not assigned a Carcinogenic Slope Factor or Reference Dose for vanadium and a GWQS cannot be calculated.

Table 4-3
Area of Concern Summary Table
Non-Residential Chromate Chemical Production Waste Site
Former Baldwin Oil Facility, Hudson County Chromate Site 63
1 Burma Road
Jersey City, New Jersey
Program Interest Number: G000008691

AOC ID	AOC Type	AOC Details	PPG Responsibility
AOC 1a to u	Storage tank and appurtenance - Above ground storage tank	Three 500-gallon, two 175-gal, nine 12,000-gallon, and 7 "Large" former ASTs	No*
AOC 2	Storage tank and appurtenance - Rail car	Former Railroad Spur	No*
AOC 3a	Drainage system and area - Drainage swale and culvert	Western Drainage Ditch	No*
AOC 3b	Drainage system and area - Drainage swale and culvert	Eastern Drainage Ditch	**Yes**
AOC 4	Drainage system and area - Storm sewer collection system	Catch Basin	No*
AOC 5	Discharge and disposal area - Historic fill material area/other fill area	Historic Fill	No*
AOC 6a to b	Other areas of concern - Hazardous substance storage or handling area	Former Interior Hazardous Material Storage Areas and Unidentified Drum	No*
AOC 7a to b	Other areas of concern - Discolored area or spill area	Staining in southern and southeastern portions of site	No*
AOC 8	Storage tank and appurtenance - Loading and unloading area	Former Loading Area	**Yes**
AOC 9	Discharge and disposal area - Historic fill material area/other fill area	Soils contaminated with Chromate Chemical Production Waste	**Yes**
AOC 10	Environmental media - Media Ground water	Groundwater contaminated from contact with Chromate Chemical Production Waste	**Yes**
AOC 11	Other areas of concern - Other discharge area	Dumping	No*

*Associated with Baldwin Oils & Commodities Company (SRP PI G000002333)

The NJDEP issued an Unrestricted Use Consent Judgment Compliance Letter for AOCs for CCPW and CCPW-related Metals Only in Soil (AOC 3b, AOC 8, and AOC 9) to PPG on January 30, 2018.

5.0 Post-Soil Remediation Investigation of Groundwater

As discussed in Section 2.0, historical groundwater investigations at the Site identified the presence of CCPW-related metals in excess of the NJDEP GWQS in shallow groundwater beneath the Site. The NJDEP requested that PPG complete the RI of CCPW-related metals in shallow groundwater at the Site in order to confirm the horizontal delineation of CCPW-related contaminants.

APTIM completed additional groundwater RI activities at the Site between May 2016 and April 2019 in accordance with the following documents

- *Final Groundwater Remedial Investigation Work Plan Technical Memorandum; Hudson County Chrome Site 63; Burma Road, Jersey City, New Jersey, Program Interest Number: G000008691* (May 2016 RIWP), APTIM, May 2016.
- *Final Groundwater Remedial Investigation Work Plan Technical Memorandum; Hudson County Chrome Site 63; Burma Road, Jersey City, New Jersey, Program Interest Number: G000008691* (July 2017 RIWP), APTIM, July 2017.
- *Final Groundwater Remedial Investigation Work Plan Technical Memorandum; Hudson County Chrome Site 63; Burma Road, Jersey City, New Jersey, Program Interest Number: G000008691* (November 2017 RIWP), APTIM, November 2017.
- *Final Groundwater Remedial Investigation Work Plan Technical Memorandum; Hudson County Chrome Site 63; Burma Road, Jersey City, New Jersey, Program Interest Number: G000008691* (October 2018 RIWP), APTIM, October 2018.

5.1 Monitoring Well Installation

APTIM subcontracted with a New Jersey licensed well driller to advance the monitoring wells to investigate shallow groundwater contamination at the Site between May 2016 and February 2019. A summary of the active site-wide monitoring wells is provided in Table 2 and presented in Figure 2.

Each monitoring well was constructed using 2-inch diameter, schedule 40 polyvinyl chloride casing with five feet of 0.010-inch slot well screen and sufficient riser to reach surface grade. Monitoring wells MW-201, MW-202, MW-301, and MW-302 were constructed of five feet of 0.010-inch slot pre-packed well screens. The use of pre-packed well screens was proposed in these wells to reduce sample turbidity by filtering out particles 10 times smaller than standard filter packed wells. Elevated levels of turbidity were observed during sampling of non-prepacked onsite monitoring wells.

The annular space of the borehole for each well was filled with No. 1 Morie filter pack to one foot above the top of the well screen. A one-foot bentonite seal was then installed on top of the filter pack. Each well was secured with a locking watertight gripper and completed with a flush-mount road box set in a concrete pad. All wells were installed in accordance with N.J.A.C. 7:9D. Permits, records, logs, and *Monitoring Well Certification Form A - As-Built Certifications* for each monitoring well are included in Appendix B. Soil cuttings from each monitoring well were containerized in properly labeled 55-gallon drums for subsequent off-site disposal.

Following installation, each monitoring well was developed for a minimum of 30 minutes by surging and pumping to remove fine particles and ensure an adequate hydraulic connection with the aquifer. Purge water was containerized in properly labeled, steel 55-gallon drums and staged on site for use in future groundwater sampling events and subsequent disposal. Disposal manifests for investigational derived wastes are provided in Appendix C.

APTIM retained the services of a New Jersey Professional Licensed Surveyor to obtain coordinate and elevation information for each of the monitoring wells. The monitoring wells were surveyed in accordance with standard industry practices. *Monitoring Well Certification Form B - Location Certifications* for each monitoring well are included in Appendix B.

5.2 Groundwater Sampling

Groundwater monitoring wells were allowed to equilibrate for approximately two weeks following installation before the collection of groundwater samples. During each groundwater sampling event, each groundwater monitoring well was purged using a 1.75-inch QED Environmental Systems Sample Pro bladder pump. Polyethylene tubing and bladders used since Teflon™ tubing and bladders are only required for sampling volatile organic compounds, consistent with the NJDEP *Field Sampling Procedures Manual* (August 2005). A new polyethylene bladder was dedicated to each well. A properly decontaminated pump was lowered to the middle of the well screen interval of each well. A new piece of disposable polyethylene tubing was used at each well and the flow rate was adjusted to remain between 100 and 500 milliliters per minute. Purging continued until field parameters (pH, specific conductance, turbidity, dissolved oxygen, and oxidation-reduction potential) stabilized, consistent with procedures outlined in the NJDEP *Field Sampling Procedures Manual*. In-situ analytical field parameters were collected using a properly calibrated water quality meter. Groundwater sampling forms for each event are provided in Appendix D.

Following the stabilization of field parameters, groundwater samples were collected for analysis in laboratory prepared glassware with appropriate sample preservative and placed into a cooler with ice. Upon completion of each groundwater sampling event, the sample cooler was transported under chain of custody procedures SGS Accutest in Dayton, New Jersey (NJDEP Certification 12129) or Alpha Analytical, Inc. of Westborough, Massachusetts (NJDEP Certification MA935) for the following analyses:

- Hexavalent chromium using USEPA SW 846 Methods 3060A and 7196A
- Total chromium, antimony, nickel, thallium, and vanadium using USEPA SW 846 Methods 3050B/ 6020

Depth to groundwater data were compiled and groundwater elevations were calculated from these measurements using the most current monitoring well reference elevations. A summary of historical groundwater elevations collected from 2016 to 2021 is provided in Table 3. A groundwater elevation contour map was developed using the November 2019 synoptic water level gauging data (see Figure 3).

Table 4 provides a summary of the analyses performed on the collected groundwater samples. A summary of QA/QC samples collected is provided in Table 5.

The laboratory reports for the post-soil remediation groundwater sampling events are provided in Appendix E and data validation reports are provided in Appendix F. Confirmation of submission of the analytical data in NJDEP's Hazsite format is provided in Appendix G.

5.3 Summary of Groundwater Remedial Investigation Analytical Results

This section presents analytical results for samples collected during implementation of groundwater RI activities. Groundwater analytical data from RI monitoring events performed from June 23, 2016 to August 9, 2021 were used to assess groundwater quality. Groundwater analytical results are compared to the NJDEP GWQS in accordance with N.J.A.C. 7:9C. Analytical data are presented on Table 6 and Figure 4, with concentrations greater than the applicable NJDEP GWQS shown in bold font. Analytical results from quality assurance samples are presented on Table 7.

Hexavalent chromium and CCPW metals were sampled in soil and groundwater extensively throughout Site 63. The CCPW metals include five of the TAL metals considered most likely to be associated with CCPW impacts: Antimony, Chromium, Nickel, Thallium, and Vanadium. Groundwater analytical results for hexavalent chromium and the CCPW metals are presented on Table 6. The following table summarizes the total number of CCPW metals results from the post-soil remediation groundwater RI data that were detected at concentrations greater than the applicable NJDEP GWQS.

Analyte	Fraction	GWQS	Units	Number of Samples	Number of Samples Exceeding NJDEP GWQS
Antimony	T	6	ug/L	38	9
Chromium	T	70	ug/L	36	12
Nickel	T	100	ug/L	36	0
Vanadium	T	60	ug/L	36	19
Thallium	T	2	ug/L	36	0
Hexavalent Chromium	T	70	ug/L	36	0
Analyte	**Fraction**	**GWQS**	**Units**	**Number of Samples**	**Number of Samples Exceeding NJDEP GWQS**
Antimony	D	6	ug/L	3	0
Chromium	D	70	ug/L	3	1
Nickel	D	100	ug/L	3	0
Vanadium	D	60	ug/L	3	0
Thallium	D	2	ug/L	3	0
Hexavalent Chromium	D	70	ug/L	3	0

Notes:

D = dissolved/filtered

T = total/unfiltered

- = indicates no samples exceeded the NJDEP GWQS for this analyte

GWQS - Groundwater Quality Standard

NJDEP - New Jersey Department of Environmental Protection

µg/L: micrograms per liter

5.3.1 Compliance Averaging – MW-303

Section 7.3.3 of the *Technical Guidance for the Attainment of Remediation Standards and Site-Specific Criteria* (Version 1.0, September 2012) states that if the initial concentration of any contaminant originating from the site or AOC in any groundwater delineation sample exceeds its applicable ground water remediation standard, the well can be resampled two additional times and the results can be averaged to demonstrate compliance with the GWQS. If the average does not exceed the applicable ground water remediation standard, then ground water delineation is considered to be

complete. Targeted CCPW-related analytes, with the exception of antimony, were found to be less than their respective GWQS in MW-303 through two consecutive rounds of sample collection.

The results for groundwater samples collected between March 2019 and November 2019 from MW-303 have been averaged to demonstrate compliance with the GWQS for antimony (see Table 8). Appendix A of the *Technical Guidance for the Attainment of Remediation Standards and Site-Specific Criteria* (Version 1.0, September 2012) (specifically Section A1.0), directs that non-detect values are to be entered as zero for the calculation. The guidance states that the rationale is "(a) there is a preference to not ascribe a data value where there is no evidence that such a datum exists, and (b) to be consistent with the guidance provided by the ProUCL software that one-half of the detection level (i.e., "Detection Limit / 2") not be used for non-detect values." The calculation on Table 8 used to determine the average antimony concentration MW-303 is (7.4 ug/l + 0 ug/l + 6.3 ug/L)/3 = 4.47 ug/L. This is less than the GWQS of 6 ug/l for antimony and delineation in this direction is considered to be complete.

Groundwater samples used for compliance averaging calculations were collected in March 2019, April 2019, and November 2019. Additional groundwater samples collected to demonstrate compliance through averaging are typically required to be collected within 60 days of the original sampling event which was discussed during September 19, 2019 technical conference call with the NJDEP and the Independent Technical Consultant. Based on the low-level exceedance observed in March 2019 and a non-detect antimony result in April 2019, it was determined that the collection of a third groundwater sample for antimony only beyond the 60 day period would be acceptable beyond. APTIM prepared meeting minutes to document the decisions made during the September 19, 2019 and the Independent Technical Consultant indicated they did not have comments following electronic submission. The meeting minutes and correspondence are included with Table 8.

5.3.2 Redevelopment of Monitoring Well MW-202 and MW-301

During the May 2021 groundwater sampling event, MW-202 was observed to contain approximately eight feet of solids within the well casing due to a broken gripper plug. On July 23, 2021, APTIM subcontracted with a New Jersey licensed well driller to remove accumulated sediment from MW-202 and redevelop MW-202 and MW-301. Sediment and development water from each monitoring well were containerized in properly labeled 55-gallon drums for future off-site disposal.

6.0 Reliability of Data: Validation and Usability

The purpose of this section is to ensure that analytical data produced by the laboratory are presented in a clear and useable format. In addition, data quality and technical usability was evaluated prior to data use. The samples collected at the site were analyzed according to USEPA SW-846 analytical methodologies, in which data reduction and reporting schemes are well developed and clearly defined. The employment of this method ensures comparability with other similarly analyzed environmental samples. Reduction, validation and reporting specifications for these analyses are detailed below. Validation Reports for all post-soil remediation data packages that required validation are included in Appendix F.

Data, as presented in the analytical data packages included as Appendix E, was primarily reviewed and validated using the following combination of method-specific criteria with professional judgement, as appropriate:

- NJDEP Standard Operating Procedure (SOP): Quality Assurance Data Validation of Analytical Deliverables Inorganics (Based on USEPA SW-846 Methods), SOP No. 5.A.16 (NJDEP, 2002);
- United States Environmental Protection Agency (USEPA) “National Functional Guidelines for Inorganic Data Review”, OSWER Publication 9240.1-51, EPA540-R-10-011, January 2010 (USEPA, 2010);
- USEPA “ICP-AES Data Validation, SOP No. HW-2a, Revision 15” (USEPA, 2012);
- NJDEP SOP for Analytical Data Validation of Hexavalent Chromium (NJDEP, 2009).
- NJDEP, Data of Known Quality Protocols Technical Guidance, Version 1.0, April 2014.
- NJDEP, Data Quality Assessment and Data Usability Evaluation Technical Guidance, Version 1.0, April 2014.
- NJDEP, Analytical Laboratory Data Generation, Assessment and Usability Technical Guidance, Version 1.0, April 2014.
- NJDEP, Quality Assurance Project Plan Technical Guidance, Version 1.0, April 2014.

The results from samples collected from MW-09 and MW-12 were not validated following collection in April 2013. Pre-soil remediation data collected from MW-09 and MW012 has not been used to determine the extent of post-soil remediation groundwater contamination emanating from the site. Groundwater sample results collected post-soil remediation were validated by APTIM, where applicable and appropriate.

Except as noted in Appendix F (specifically JD25615/JD25615A and JD25646/JD25646A), the analytical data have been found to be of adequate quality and of sufficient precision, accuracy, representativeness, comparability, completeness, and sensitivity for the intended purpose. Data associated with parameters that did not meet QC specifications or compliance requirements, were qualified in accordance with USEPA Region II/NJDEP specifications/guidelines, as appropriate.

Except as noted in Appendix F (specifically JD25615/JD25615A and JD25646/JD25646A), the investigator has confidence that the laboratory data are usable for their intended purpose as part of a remedial investigation. As the data quality objectives have been met, except as noted, these analytical data may be relied on with confidence and used to support defensible conclusions regarding the site.

Although some analytical data may have been qualified, the data generated during the course of APTIM's groundwater remedial investigation work detailed herein were found to be usable, with the exception of data from MW-302 during the May 2021 groundwater sampling event.

6.1 May 2021 Sampling Event

Total chromium was reported at an estimated concentration of 533 ug/L (with a duplicate estimated concentration of 1,440 ug/L) in MW-301 and at a concentration of 24.7 ug/L in MW-302. Vanadium was reported in MW-301 at an estimated concentration of 278 ug/L (with a duplicate estimated concentration of 377 ug/L) and in MW-301 at a concentration of 15.9 ug/L.

During this sampling event, groundwater samples were also collected from MW-301 and MW-302 for dissolved CCPW-related metals to evaluate if turbidity readings greater than 10 Nephelometric Turbidity Units (NTU) result in elevated contaminant concentrations. For dissolved chromium, MW-301 exhibited a concentration of 252 ug/L and MW-302 exhibited a concentration of 326 ug/L. Dissolved vanadium was not detected in excess of the laboratory MDL of 500 ug/L in MW-301 or MW-302. The results of the groundwater sample analyses are provided on Table 6. As noted above and on Table 6, the total chromium concentration in MW-302 was reported by the laboratory to be 24.7 ug/L, while the dissolved chromium concentration in MW-302 was reported to be 326 ug/L.

According to DV guidance, instances where the filtered result exceeds the concentration result for total metals, both results are to be qualified as estimated (J), but both are subject to rejection (R) when the result of the filtered sample exceeds the total result by more than 50% (USEPA, 1988; Westchester Community College, 1995). The chromium results in the samples from MW-302 were rejected during data validation because the filtered chromium result exceeded the total chromium concentration by 172%. The chromium results in the field duplicate sample (DUP) appear highly suspect compared to the results of MW-301 where the filtered result was approximately half of 533 µg/L, but the entire 1,440 µg/L chromium result appears to have been removed through the filtration step. Based on the results of the filtration data, the reported results for chromium appear highly suspect and are being treated as such during the evaluation of groundwater data. See Appendix F for additional information.

7.0 Receptor Evaluation

In order to assess potential impacts to human and environmental receptors associated with the Site, a receptor evaluation was conducted. As outlined in the NJDEP *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E), sensitive receptors are divided into four primary categories:

- **Land Use**: Sensitive populations such as schools, playgrounds, daycare facilities, etc. within 200 feet of the subject property must be identified and evaluated.
- **Groundwater**: Groundwater use near an impacted property must be evaluated by conducting a well search. Further, any potable/domestic supply wells identified within 250 feet upgradient, 500 feet side gradient, or 500 downgradient feet of a known point of groundwater contamination must be sampled.
- **Vapor Intrusion (VI)**: If volatile organic compounds are present in groundwater above the NJDEP GWSL and/or free phase petroleum product is identified on a property and structures are located near the impacted media, VI must be evaluated.
- **Ecological**: An ecological evaluation consists of identifying contaminants of concern (COCs) on an impacted property, identifying sensitive ecological receptors on or adjacent to an impacted property, and identifying potential migratory pathways between the COCs and any identified sensitive ecological receptors.

Each of the above referenced receptor categories are evaluated in the following subsections. A stand-alone copy of the *Receptor Evaluation Form* will be provided to the NJDEP separately for administrative purposes.

7.1 Land Use

The Site is located in an industrialized area of Jersey City, New Jersey. No sensitive land use populations were identified on the Site or within 200 feet of the subject property.

7.2 Groundwater

A well search was completed in May 2020 to identify potentially potable wells located within the distances specified in N.J.A.C. 7:26E-1.14. Two potentially potable wells were identified within a ½-mile radius of the site. These are industrial wells identified by permit numbers 2600004392 and 2600049931. These wells have not been sampled. On May 13, 2020, APTIM completed a canvas of the locations of these wells. APTIM did not observe physical evidence of the presence of these wells at the locations included in the well search.

In order to evaluate groundwater usage pursuant to N.J.A.C. 7:26e-1.14(a)2 et seq., APTIM conducted a door-to-door survey. On May 19, 2020, letters with a questionnaire were sent to properties located within 250-feet upgradient, 500-feet side gradient, and 500-feet downgradient of the Site. No responses to the inquiries were received. An additional well search was completed in October 2021. No additional potentially potable wells were identified.

Based on the concentrations of total chromium identified in monitoring wells MW-202 and MW-301, the NJDEP requested that PPG evaluate the interior of the structure located at 14-16 Burma Road for the potential presence of chromium blooms. APTIM completed interior inspections of the structure on July 26, 2018 and March 7, 2019. No evidence of suspected chromium blooms were observed during the inspections.

7.3 Vapor Intrusion

PPG's responsibilities for groundwater contamination associated with the Site are limited to CCPW-related contaminants, which do not pose a VI risk. It should be noted that there is the potential for VI issues to be associated with other historic operations that occurred at the Site in connection with Baldwin Oils (PI G000002333).

7.4 Ecological

In accordance with the requirements set forth in N.J.A.C. 7.26E-1.16, an Ecological Evaluation was completed at the Site in January 2012. As the entire Site consisted of historic fill and was fully developed, no ecological sensitive natural resource receptors were identified on the subject property. The Site is surrounded on three sides by roads. On the northern boundary there is a thin strip of forested land that abuts a NJTA exit ramp. As all shallow CCPW-impacted soil has been removed from the site and replaced with clean fill from a NJ-licensed quarry, no CCPW-related contaminants of potential ecological concern (COPECs) are present that could pose a potential impact to any adjacent ecological receptors. As no COPECs are present, there are no contaminant migration pathways present at or off site. No further ecological evaluation is required.

8.0 Conclusions and Recommendations

Tetra Tech identified the presence of CCPW-related metals contamination in groundwater at concentrations in excess of the GWQS at the Site beginning in 2011. Historical investigations revealed that CCPW-related groundwater contamination is limited to the shallow groundwater zone.

The results of the groundwater RI completed following the remedial action for CCPW-impacted soil was successful in reducing CCPW-related contaminants in groundwater within the property boundary of the Site to concentrations less than the applicable GWQS, with the exception of vanadium.

CCPW-related contaminants and pH in groundwater in excess of the applicable GWQS have been identified in off-site monitoring well MW-202 and MW-301 and antimony, total chromium, and vanadium were identified in EWMA's historic monitoring well MW-4 on the 14-16 Burma Road property.

Based on groundwater flow direction regionally and groundwater flow direction determined during each of the groundwater sampling events, groundwater contamination has been horizontally delineated by interpolation as shown on Exhibit B-1 in Appendix H.

8.1 Proposed Classification Exception Area/ Well Restriction Area

A CEA is established in order to provide notice that the GWQS for a given aquifer classification are not or will not be met in a localized area due to natural water quality or anthropogenic influences, and that designated aquifer uses are suspended in the affected area for the term of the CEA. Pursuant to N.J.A.C. 7:9C, the NJDEP requires the restriction of potable ground water uses within any CEA where there is or will be an exceedance of the Primary Drinking Water Standards (N.J.A.C. 7:10). Therefore, when contaminant concentrations in a CEA exceed Maximum Contaminant Levels (MCLs), and designated aquifer use based on classification includes potable use, the NJDEP will also identify the CEA as a Well Restriction Area (WRA). The WRA functions as the institutional control by which potable use restriction can be effected.

A NJDEP CEA/WRA Fact Sheet form with Exhibits and draft notification letters are provided in Appendix H. Required notifications for the CEA/WRA and the CEA/WRA Fact Sheet package will be submitted pursuant to N.J.A.C.-7:26C-7.3(a)4 upon NJDEP approval of this RIRA and prior to submission of the CEA/WRA Fact Sheet package to the Bureau of Case Assignment and Initial Notice

The proposed groundwater CEA/WRA is located in the shallow water-bearing zone in the southern portion of Site 63. The proposed CEA/WRA is to extend from the west (upgradient) side of monitoring well MW-103 to Burma Road, under Burma Road, and to the southeast (downgradient) side of Burma Road to include a portion of the 14-16 Burma Road property and existing monitoring wells MW-301 and MW-303. The proposed CEA includes locations with greater than 70 ug/L of Total Chromium, 60 ug/L of Vanadium, 6 ug/L of Antimony and pH greater than 8.5 in groundwater. Exhibit B-1 in Appendix H shows the proposed CEA/WRA boundary for Site 63.

Site 63 is underlain by fill materials including soil, silty sand, sand, angular fill materials, ash, and other fill materials. Prior to PPG's soil excavation associated with AOC 3b, AOC 8, and AOC 9, fill materials containing CCPW occurred within the upper 0 to 5 feet bgs. The fill material extends downward to depths of 7 to 10 feet bgs. The fill material is underlain by undisturbed natural soils including meadow mat, clay, silt, and sand.

Following soil remediation activities, the site was backfilled with sand, stone fines, and/or screenings from stone crushing operations. Groundwater occurs at depths ranging from 0.17 to 5.62 feet below top of well casing with groundwater table elevations ranging from approximately 3.40 to 8.27 feet NAVD88.

The groundwater hydraulic gradients during the 2017 to 2021 time period are oriented southward and southeastward based on groundwater levels in the monitoring wells. The hydraulic gradients have ranged from 0.013 to 0.014 (feet per feet, dimensionless). Because of the low-elevation coastal-plain setting of the site and low topographic slopes, the hydraulic gradients suggest the hydraulic conductivity of the fill material is low. Based on the measured hydraulic gradients, appropriate values of the hydraulic conductivity (0.05 to 0.1 feet per day), and porosity values of 0.35 (35%), the average linear velocity of groundwater in the shallow groundwater zone is estimated to range from 0.65 to 1.5 feet per year.

The maximum concentrations of chromium in the shallow groundwater zone within the CEA have ranged from 267 to 1,650 ug/L and have occurred in monitoring wells MW-202 and MW-301. The maximum extent of chromium-affected groundwater over the duration of the CEA is shown in Exhibit B-1 in Appendix H. The northwestern (upgradient) boundary of the CEA is located between monitoring wells MW-103 and MW-12. The southeastern (downgradient) boundary of the CEA is located to the east and southeast of historical monitoring well MW-3 (associated with the 14-16 Burma Road property). The greatest length of the CEA from upgradient to downgradient (northwest to southeast) is approximately 370 feet. The greatest width of the CEA is approximately 275 feet.

The CEA duration will be indeterminate, as it is being established for metals. The extent of the CEA is predicted to stay relatively constant during the duration of the CEA because of the low rates of groundwater movement. For example, based on the estimated range of average linear velocity values (linear rate of movement), the maximum downgradient movement of the chromium-affected groundwater is estimated to be approximately 6.5 to 15 feet after 10 years. Over a period of 30-years, the maximum amounts of movement are predicted to range from 19.5 to approximately 45 feet. Offsite concentrations are believed to have migrated from Site 63 prior to the completion of soil remediation.

The estimates of the fate and transport of chromium-affected groundwater are conservative and based only on advective transport of the groundwater. Degradation processes have not been included in the estimates of chromium plume movement. However, there is significant potential for chromium to adsorb to soil materials in the shallow groundwater zone and to undergo precipitation processes to form insoluble chromium hydroxide. Chromium III, which is the chromium species that makes up total chromium in the absence of hexavalent chromium, sorbs to soil at pH values above 4 to 5 and precipitates as chromium hydroxide at pH greater than 5. pH values in MW-202, which is the well that exhibits the highest total chromium concentration, have been observed to be greater than 11. Monitoring wells MW-301 (second highest total chromium concentrations) and MW-302 have exhibited pH concentrations greater than 5. Volatile organic compounds were encountered during the excavation of Site 63 and petroleum staining was observed in borings within Burma Road. The presence of organic contaminants within the CEA may contribute to reducing conditions where insoluble chromium hydroxide would be formed.

The predicted horizontal extent of the chromium plume has been estimated based on advective transport of the chromium constituents. Vertical transport of chromium in the CEA is likely to be minimal because of the low elevation of the hydraulic head in the shallow groundwater zone and the near-coast location of the site. Historical monitoring well MW-8, which was installed in native soils underlying the fill material, did not detect chromium or associated metals.

The estimation of chromium plume transport does not include VI because of the lack of volatility of the chromium species in groundwater.

The proposed CEA is based on no anticipated changes of the property use or other site conditions. Burma Road and the adjacent fill material are projected to remain in place over the proposed CEA.

9.0 Remedial Action Work Plan

9.1 Remedial Action Description

This RAWP has been prepared to propose a remedial action for groundwater (AOC 10) that consists of the placement of an institutional control in the form of a CEA/WRA and Remedial Action Permit for Groundwater. The extent of the proposed CEA/WRA is presented in Appendix H.

The CEA/WRA and Remedial Action Permit for Groundwater will require biennial certification following permit issuance until such time as CCPW-related groundwater contamination decreases and complies with the GWQS.

9.2 Pre-Remediation Activities, Permitting, and Approvals

9.2.1 Health and Safety Plan

The program-wide health and safety plan (HASP) will be used for the proposed work described in this RAWP. The HASP establishes general health and safety protocols to be followed by Site personnel during implementation of the RAWP. The HASP describes training, medical surveillance, personnel hygiene practices, hazard exposure monitoring, and monitoring equipment maintenance requirements. The HASP may be updated, if needed, to address issues that may be encountered during the remedial actions.

9.2.2 Field Sampling Plan/Quality Assurance Project Plan

The program-wide FSP/QAPP establishes the overall quality assurance (QA) objectives for the remedial action program and documents sampling and analytical procedures to be used for collecting and analyzing environmental samples. It describes procedures for equipment decontamination, sample handling, sample chain-of-custody protocols, and standard QA procedures for conducting the remedial actions. The FSP/QAPP will be updated as conditions warrant. The FSP/QAPP is provided in the event sampling is required.

9.3 Capillary Break Evaluation

The potential for upward migration of dissolved-phase hexavalent chromium through capillary rise, potentially resulting in visible CCPW impacts in the form of chromium “blooms,” was evaluated with respect to the remedy completed at Site 63.

Within the boundaries of Site 63, upward migration of dissolved hexavalent chromium via capillary rise is not expected to occur based on the following lines of evidence:

- CCPW-impacted soil has been removed and the NJDEP issued an Unrestricted Use Consent Judgment Compliance Letter for AOCs for CCPW and CCPW-related Metals Only in Soil (AOC 3b, AOC 8, and AOC 9) to PPG on January 30, 2018.
- Chromium concentrations in shallow groundwater within the boundaries of Site 63 (MW-12, MW-101, MW-102, and MW-103) have not exceeded the NJDEP GWQS for total chromium following completion of the soil remedy. Hexavalent chromium in shallow groundwater has not

been detected at concentrations greater than the laboratory method detection limit of 10 micrograms per liter in samples collected between June 2016 and August 2021 (see Table 9).
- Chromium blooms have not been observed at surface grade within the boundaries of Site 63 since the soil remediation was completed.

Therefore, a capillary break is not required within the boundaries of Site 63.

Downgradient of Site 63, upward migration hexavalent chromium via capillary rise is also not expected to occur based on the following lines of evidence:

- The shallowest depth to groundwater downgradient of Site 63, as determined through collection of depth to groundwater information from permanent monitoring wells MW-202, MW-301, MW-302, and MW-303 is approximately 2.47 feet below surface grade (MW-202; July 26, 2017).
- Review of the boring logs generated during pre-soil remedial investigation activities and the remedial investigations discussed herein indicates that materials in the saturated zone generally consist of sand, silty sand, and/or sandy silt, that is further described as historic fill. Silty sands are considered coarse-grained soil category under the Unified Soil Classification System (USCS) and therefore, capillary action is expected to be limited.
- Soil samples collected from HCC Site 65, Supplemental Remediation Area and/or the Released Area[2] exhibited concentrations in excess of the CrSCC for hexavalent chromium and concentrations ranging from 28.8 mg/kg to 283 mg/kg (see Table 10 and Appendix I).
- Total chromium concentrations in groundwater beyond the remediated boundaries of Site 63 have ranged from non-detect to 1,650 ug/L. However, hexavalent chromium in shallow groundwater has not been detected at concentrations greater than the laboratory MDL of 10 ug/L in samples collected between June 2016 and August 2021 (see Table 9).
- The entire plume area where total chromium concentrations exceed the NJDEP GWQS is covered by asphalt surfaces, truncating any capillary action below the surface, preventing wicking to the surface, and functioning as a component of a capillary break.
- Chromium blooms have not been observed at surface grade directly adjacent to the Site since the soil remediation was completed.

Therefore, a capillary break is not required downgradient of Site 63. However, the NJDEP is requiring PPG to visually inspect the existing asphalt in the area adjacent to Site 63 that has been identified as containing total chromium concentrations in excess of the GWQS (Figure 5) on an annual basis as part of the ongoing monitoring, maintenance, and reporting requirements discussed in Section 9.5.

[2] As defined in the January 9, 2018 Settlement Agreement between the NJDEP, PPG, the City of Jersey City, and the JCMUA

9.4 Schedule of Implementation

The schedule for the remediation of groundwater will include the following activities:

- Submit RIRA/RAWP for Groundwater (February 2022)
- NJDEP Approval of RIRA/RAWP (March 2022)
- Submit Remedial Action Report for Groundwater (June 2022)
- Submit Remedial Action Permit for Groundwater Application (February 2023)
- Receive Remedial Action Permit for Groundwater from NJDEP (May 2023)
- Visually inspect area of total chromium GWQS exceedance (Annually - spring)
- Biennial gauging of entire monitoring well network and sampling of monitoring wells (August 2023)
- Biennial Certification reporting for Remedial Action Permit for Groundwater (2025)

A more detailed schedule to comply with the Technical Requirements for Site Remediation, N.J.A.C. 7:26E-5.5(b)11, will be provided within three months of approval of this RIRA/RAWP. The schedule is contingent upon NJDEP approval, site access issues, and weather conditions. The schedule will be developed based on consultation with the NJDEP to comply with the remedial action timeframe discussed in Section 9.7 of this RIRA/RAWP.

The Master Schedule as monitored by the Site Administrator pursuant to the JCO defines the remedial investigation and remedial action timeframes and supersedes the requirements in N.J.A.C. 7:26E-4.10 and N.J.A.C. 7:26E-5.8.

9.5 Operation, Maintenance, Monitoring and Reporting Requirements

Visual inspection for potential chromium blooming of the area of total chromium in groundwater concentrations in excess of the GWQS will be completed on an annual basis during the spring season. The inspection will consist of viewing and documenting conditions observed for inclusion in the Biennial Certification and Monitoring Report. Biennial monitoring of groundwater is proposed until such time as concentrations of CCPW-related metals are in compliance with the GWQS. The CEA/WRA and the continued need for a Remedial Action Permit for Groundwater will be re-evaluated on a biennial basis.

Prior to groundwater sampling of select site monitoring wells, static groundwater levels will be recorded to aid in the determination of groundwater flow direction and generation of groundwater contour maps. The measurements will be taken from the top of the inner casing at a referenced measuring point. Water level measurements will be recorded to the nearest 0.01-foot using an electronic water level meter. To aid in preparation of the contour maps, depth to water measurements will be collected from monitoring wells MW-12, MW-101, MW-102, MW-103, MW-201, MW-202, MW-301, MW-302, and MW-303.

Groundwater samples will be collected from these monitoring wells utilizing low-flow sampling methodologies. The monitoring well will be sampled using QED submersible bladder pumps. Polyethylene tubing and bladders will be utilized since Teflon™ tubing and bladders are only required for sampling volatile organic compounds, consistent with the NJDEP *Field Sampling Procedures Manual* (August 2005). A new polyethylene bladder will be dedicated to the well. A properly decontaminated pump will be lowered to the middle of the well screen interval of the well. A new piece

of disposable, 1/4-inch diameter polyethylene tubing will be used at each well. The flow rate will be adjusted to remain between 100 and 500 milliliters per minute. Purging will continue until field parameters (pH, specific conductance, turbidity, dissolved oxygen, and oxidation-reduction potential) stabilize, consistent with procedures outlined in the NJDEP *Field Sampling Procedures Manual*.

Upon stabilization of field parameters, groundwater samples will be containerized in laboratory prepared glassware with appropriate sample preservative and placed into a cooler with ice. Upon completion of the groundwater sampling program, the sample cooler will be transported under chain-of-custody procedures to a New Jersey certified laboratory for the following analyses, based on the historic groundwater information associated with the Site:

- Hexavalent chromium using USEPA Methods SW 846 3060A and 7196A
- Total chromium, antimony, nickel, thallium, and vanadium using USEPA Method SW 846 3050B and 6020B

QA/QC samples in the form of MS/MSD and field duplicate samples will be collected at a frequency of 1 per 20 samples. Field blanks associated with QA/QC will be analyzed at a frequency of 1 field blank per 20 samples or 1 per field sampling day, whichever is more frequent.

The proposed monitoring schedule for the Site is shown in Table 9-5.

Table 9-5
Proposed Groundwater Monitoring Program
Non-Residential Chromate Chemical Production Waste Site
Former Baldwin Oil Facility, Hudson County Chromate Site 63
1 Burma Road
Jersey City, New Jersey
Program Interest Number: G000008691

Well ID	Well Type	Sampling Schedule	Reporting Schedule	Parameters for Each Well
MW-12	Sentinel	Biennially	Biennially	Depth to Water
MW-101	Sentinel	Biennially	Biennially	Depth to Water, Cr6+, Cr, Sb, V, pH
MW-102	Sentinel	Biennially	Biennially	Depth to Water, Cr6+, Cr, Sb, V, pH
MW-103	Sentinel	Biennially	Biennially	Depth to Water
MW-201	Sentinel	Biennially	Biennially	Depth to Water, Cr6+, Cr, Sb, V, pH
MW-202	Plume	Biennially	Biennially	Depth to Water, Cr6+, Cr, Sb, V, pH
MW-301	Plume	Biennially	Biennially	Depth to Water, Cr6+, Cr, Sb, V, pH
MW-302	Plume Fringe	Biennially	Biennially	Depth to Water, Cr6+, Cr, Sb, V, pH

Well ID	Well Type	Sampling Schedule	Reporting Schedule	Parameters for Each Well
MW-303	Plume Fringe	Biennially	Biennially	Depth to Water, Cr6+, Cr, Sb, V, pH

9.6 Performance Evaluation

The NJDEP's GWQS (N.J.A.C. 7:9C, last amended June 2020) will be used to evaluate the analytical results for chromium and CCPW-related metals. Sampling locations and frequency will be re-evaluated during the biennial certification.

9.7 Remedial Action Timeframe

A RAR will be submitted after NJDEP approval is received for this RIRA/RAWP to document the remediation and in order to obtain a Remedial Action Permit for Groundwater. The Master Schedule as monitored by the Site Administrator pursuant to the JCO defines the remedial investigation and remedial action timeframes and supersedes the requirements in N.J.A.C. 7:26E-4.10 and N.J.A.C. 7:26E-5.8.

10.0 References

The following documents, publications, maps, etc. were used as source materials for this RIRA/RAWP:

ACO, 1990. *Administrative Order on Consent in the Matter of Hudson County Chromate Chemical Production Waste Sites and PPG Industries, Inc*. July 19, 1990.

AECOM, *Field Sampling Plan/Quality Assurance Project Plan; PPG Non-Residential and Residential Chromium Sites; Hudson County, New Jersey*, June 2010.

AECOM, *Remedial Investigation Work Plan; Non-Residential Chromate Chemical Production Waste Sites – Sites 63 and 65; Jersey City, New Jersey* (March 2011 RIWP), March 2011

APTIM, *Final Groundwater Remedial Investigation Work Plan Technical Memorandum; Hudson County Chrome Site 63; Burma Road, Jersey City, New Jersey, Program Interest Number: G000008691* (May 2016 RIWP), May 2016.

APTIM, *Final Remedial Action Report; Non-Residential Chromate Chemical Production Waste Site; Former Baldwin Oil Facility, Hudson County Chromate Site 63; 1 Burma Road; Jersey City, New Jersey; Program Interest Number: G000008691* (RAR), June 2016

APTIM, *Remedial Action Report, Hudson County Chromate Site 65, Burma Road and Morris Pesin Drive, Jersey City, Hudson County, New Jersey, Program Interest Number G000008693*, May 2019

APTIM, *Final Groundwater Remedial Investigation Work Plan Technical Memorandum; Hudson County Chrome Site 63; Burma Road, Jersey City, New Jersey, Program Interest Number: G000008691* (July 2017 RIWP), July 2017.

APTIM, *Final Groundwater Remedial Investigation Work Plan Technical Memorandum; Hudson County Chrome Site 63; Burma Road, Jersey City, New Jersey, Program Interest Number: G000008691* (November 2017 RIWP), November 2017.

APTIM, *Final Groundwater Remedial Investigation Work Plan Technical Memorandum; Hudson County Chrome Site 63; Burma Road, Jersey City, New Jersey, Program Interest Number: G000008691* (October 2018 RIWP), October 2018.

CB&I Environmental & Infrastructure, Inc., *Health and Safety Plan; Site Investigation at Sites 63 and 65; 1 Burma Road, Jersey City, New Jersey*, November 18, 2016.

EWMA, LLC, *Remedial Investigation Report/Remedial Action Report/Remedial Action Work Plan*, *14-16 Burma Road, Jersey City, Hudson Co, New Jersey, NJDEP Program Interest Number G000062419,* November 2012.

Fetter, C.W., *Applied Hydrogeology*, 3rd Edition, 1994.

JCO, 2009, NJDEP, PPG, and the City of Jersey City, June 26, 2009.

Nielson, D.M., *Practical Handbook of Groundwater Monitoring*, 1991.

N.J.A.C. 7:9C, *Ground Water Quality Standards*, June 2020.

N.J.A.C. 7:26C – *Administrative Requirements for the Remediation of Contaminated Sites*, August 6, 2018.

N.J.A.C. 7:26D –*Remediation Standards*, dated May 2021.

N.J.A.C. 7:26E – *Technical Requirements for Site Remediation*, August 6, 2018.

NJDEP *Field Sampling Procedures Manual*, dated August 2005 (last revised April 2011).

NJDEP *Development of Site-Specific Impact to Groundwater Soil Remediation Standards Using the Synthetic Precipitation Leaching Procedure Guidance*, dated November 2013.

NJDEP *Chromium Soil Cleanup Criteria*, September 2008, revised April 2010.

NJDEP, *Technical Guidance for the Attainment of Remediation Standards and Site-Specific Criteria* (Version 1.0), dated September 2012

Tetra Tech, 2013, *Remedial Investigation Report*, April 2013

Tables

Table 1
Pre-Soil Remediation Groundwater Analytical Results: MW-09 and MW-12
Hudson County Chromate Site 63
1 Burma Road
Jersey City, New Jersey
PI Number: G000008691

Client Sample ID: Lab Sample ID: Date Sampled: Matrix:	CAS#	Units	GWQS	063-MW-9 460-53955-1 4/10/2013 Ground Water	Dup-1 460-53955-4FD 4/10/2013 Ground Water	063-MW-12 460-53955-2 4/10/2013 Ground Water	Field Blank 460-53955-5 4/10/2013 Field Blank
Metals Analysis							
Antimony	7440-36-0	ug/l	6	2 J	2.4 J	1.9 U	1.9 U
Chromium	7440-47-3	ug/l	70	8.2	4.9 J	68.9	3.9 U
Nickel	7440-02-0	ug/l	100	4.1 J	4.1 J	39.5	4.1 U
Thallium	7440-28-0	ug/l	2	0.79 U	0.79 U	0.79 U	0.79 U
Vanadium	7440-62-2	ug/l	60[a]	5.4	4.6 J	**83.9**	3.8 U
General Chemistry							
Cr (VI)	18540-29-9	ug/l	70	3.2 U	3.2 U	14.6 J	3.2 U

Notes:

CAS # - Chemical Abstract Service Registry Number

GWQS - New Jersey Department of Environmental Protection Groundwater Quality Standards (N.J.A.C. 7:9C) (last amended August 9, 2018)

ug/l - micrograms per liter

NS - No GWQS established for this analyte.

[a] The GWQS for vanadium pentoxide is shown. A GWQS has not been established for total vanadium. The USEPA Integrated Risk Information System (IRIS) database, which is incorporated into N.J.A.C. 7:9D by reference, has not assigned a Carcinogenic Slope Factor or Reference Dose for vanadium and a GWQS cannot be calculated.

Sample ID 063_MW-9 is parent of Dup-1.

063_MW-9 was collected from monitoring well MW-09 (Permit E201303255)

063_MW-12 was collected from monitoring well MW-12 (Permit E201303256)

Bold indicates an exceedance of the NJDEP GWQS

Analytical Data Qualifiers:

U - The analyte was not detected at the stated reporting limit.

J - The reported result is an estimated value.

Table 2
Monitoring Well Network
Hudson County Chromate Site 63
1 Burma Road
Jersey City, New Jersey
PI Number: G000008691

Well ID	Easting (ft NAD83)	Northing (ft NAD83)	Well Permit Number	Installation Date	Total Depth (ft)	Screened Interval (ft)	Well Diameter (inches)	Top of Casing Elevation (ft NAVD88)	Top of Screened Interval Elevation (ft NAVD88)	Bottom of Screened Interval Elevation (ft NAVD88)
MW-12	612227	680526	E201303256	3/26/2013	10	5 - 10	2	10.50	5.50	0.50
MW-101	612244	680317	E201606011	5/27/2016	7	2 - 7	2	7.81	5.81	0.81
MW-102	612301	680490	E201606013	5/27/2016	8	3 - 8	2	8.54	5.54	0.54
MW-103	612221	680462	E201606012	5/27/2016	7	2 - 7	2	7.91	5.91	0.91
MW-201	612093	680140	E201707273	7/6/2017	10	5 - 10	2	8.56	3.56	-1.44
MW-202	612280	680284	E201707274	7/5/2017	11	6 - 11	2	8.03	3.03	-1.97
MW-301	612337	680305	E201714023	12/22/2017	10	5 - 10	2	7.93	2.93	-2.07
MW-302	612289	680239	E201714024	12/22/2017	10	5 - 10	2	7.95	2.95	-2.05
MW-303	612396	680373	E201901458	2/21/2019	12	7 - 12	2	9.06	2.06	-2.94

Notes:
ft - feet
NAD83 - North American Datum of 1983 (Horizontal)
NAVD88 - North American Vertical Datum of 1988 (Vertical)

Table 3
Groundwater Elevation Data
Hudson County Chromate Site 63
1 Burma Road
Jersey City, New Jersey
PI Number: G000008691

Monitoring Well ID	Top of Casing Elevation (feet NAVD88)	Easting	Northing	6/23/2016		7/21/2016		7/26/2017		2/13/2018	
				Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet NAVD88)	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet NAVD88)	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet NAVD88)	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet NAVD88)
Onsite Monitoring Wells											
MW-101	7.81	612244	680317	1.52	6.29	1.10	6.71	0.94	6.87	NM	NM
MW-102	8.54	612301	680490	1.90	6.64	1.55	6.99	1.16	7.38	NM	NM
MW-103	7.91	612221	680462	1.45	6.46	1.00	6.91	0.80	7.11	NM	NM
MW-12	10.5	612227	680526	NM	NM	NM	NM	3.27	7.23	NM	NM
Offsite Monitoring Wells											
MW-201	8.56	612093	680140	NI	NI	NI	NI	3.70	4.86	2.84	5.72
MW-202	8.03	612280	680284	NI	NI	NI	NI	2.19	5.84	2.55	5.48
MW-301	7.93	612337	680305	NI	NI	NI	NI	NI	NI	NM	NM
MW-302	7.95	612289	680239	NI	NI	NI	NI	NI	NI	4.05	3.90
MW-303	9.06	612396	680373	NI	NI	NI	NI	NI	NI	NI	NI

Monitoring Well ID	Top of Casing Elevation (feet NAVD88)	Easting	Northing	7/26/2018		3/7/2019		4/5/2019		11/8/2019	
				Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet NAVD88)	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet NAVD88)	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet NAVD88)	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet NAVD88)
Onsite Monitoring Wells											
MW-101	7.81	612244	680317	NM	NM	0.90	6.91	1.55	6.26	1.88	5.93
MW-102	8.54	612301	680490	0.90	7.64	0.50	8.04	0.30	8.24	0.27	8.27
MW-103	7.91	612221	680462	0.60	7.31	0.50	7.41	0.19	7.72	0.17	7.74
MW-12	10.5	612227	680526	3.20	7.30	2.82	7.68	3.20	7.30	3.17	7.33
Offsite Monitoring Wells											
MW-201	8.56	612093	680140	4.10	4.46	2.85	5.71	3.45	5.11	5.03	3.53
MW-202	8.03	612280	680284	2.30	5.73	2.25	5.78	NM	NM	NM	NM
MW-301	7.93	612337	680305	4.20	3.73	4.28	3.65	4.28	3.65	NM	NM
MW-302	7.95	612289	680239	4.20	3.75	3.72	4.23	4.10	3.85	4.02	3.93
MW-303	9.06	612396	680373	NI	NI	5.45	3.61	5.40	3.66	5.62	3.44

Monitoring Well ID	Top of Casing Elevation (feet NAVD88)	Easting	Northing	5/26/2021		8/6/2021	
				Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet NAVD88)	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet NAVD88)
Onsite Monitoring Wells							
MW-101	7.81	612244	680317	1.70	6.11	0.45	7.36
MW-102	8.54	612301	680490	0.90	7.64	1.75	6.79
MW-103	7.91	612221	680462	0.50	7.41	0.40	7.51
MW-12	10.5	612227	680526	NM	NM	NM	NM
Offsite Monitoring Wells							
MW-201	8.56	612093	680140	3.60	4.96	3.41	5.15
MW-202	8.03	612280	680284	NM	NM	4.32	3.71
MW-301	7.93	612337	680305	4.50	3.43	4.30	3.63
MW-302	7.95	612289	680239	4.20	3.75	4.09	3.86
MW-303	9.06	612396	680373	5.75	3.31	5.55	3.51

NAVD88 - North American Vertical Datum, 1988
TOC - top of casing
NI - Not installed
NM - Not monitored
11/8/2019 - synoptic gauging not completed per discussion with New Jersey Department of Environmental Protection and Independent Technical Consultant

Table 4
Post-Soil Remediation Groundwater Sample Summary
Hudson County Chromate Site 63, Burma Road, Jersey City
NJDEP SRP ID G000008691

Monitoring Well ID	Sample ID	Sample Type	Fraction	Lab SDG	Laboratory Sample ID	Sample Date	Antimony	Total Chromium	Nickel	Thallium	Vanadium	Hexavalent Chromium	Eh/pH
MW-12	MW-12	N	T	JC47790	JC47790-7	7/26/2017	X	X	X	X	X	X	X
MW-101	MW101	N	T	JC22847 / JC22847A	JC22847-2 / JC22847-2A	6/23/2016	X	X	X	X	X	X	X
MW-101	MW101	N	T	JC24458 / JC24458A	JC24458-3 / JC24458-3A	7/21/2016	X	X	X	X	X	X	X
MW-101	DUP	FD	T	JC24458 / JC24458A	JC24458-4 / JC24458-4A	7/21/2016	X	X	X	X	X	X	X
MW-101	MW-101	N	T	JC47790	JC47790-1	7/26/2017	X	X	X	X	X	X	X
MW-102	MW102	N	T	JC22847 / JC22847A	JC22847-3 / JC22847-3A	6/23/2016	X	X	X	X	X	X	X
MW-102	DUP01	FD	T	JC22847 / JC22847A	JC22847-4 / JC22847-4A	6/23/2016	X	X	X	X	X	X	X
MW-102	MW102	N	T	JC24458 / JC24458A	JC24458-2 / JC24458-2A	7/21/2016	X	X	X	X	X	X	X
MW-102	MW-102	N	T	JC47790	JC47790-2	7/26/2017	X	X	X	X	X	X	X
MW-102	DUP	FD	T	JC47790	JC47790-3	7/26/2017	X	X	X	X	X	X	X
MW-103	MW103	N	T	JC22847 / JC22847A	JC22847-1 / JC22847-1A	6/23/2016	X	X	X	X	X	X	X
MW-103	MW103	N	T	JC24458 / JC24458A	JC24458-1 / JC24458-1A	7/21/2016	X	X	X	X	X	X	X
MW-103	MW-103	N	T	JC47790	JC47790-8	7/26/2017	X	X	X	X	X	X	X
MW-201	MW-201	N	T	JC47790	JC47790-6	7/26/2017	X	X	X	X	X	X	X
MW-201	MW-201	N	T	JC60715 / JC60715A	JC60715-3 / JC60715-3A	2/13/2018	X	X	X	X	X	X	X
MW-202	MW-202	N	T	JC47790	JC47790-5	7/26/2017	X	X	X	X	X	X	X
MW-202	MW-202	N	T	JC60715 / JC60715A	JC60715-1 / JC60715-1A	2/13/2018	X	X	X	X	X	X	X
MW-202	DUP01	FD	T	JC60715 / JC60715A	JC60715-2 / JC60715-2A	2/13/2018	X	X	X	X	X	X	X
MW-202	MW-202	N	T	JC83999	JC83999-1	3/7/2019	X	X	X	X	X	X	X
MW-202	MW-DUP	FD	T	JC83999	JC83999-2	3/7/2019	X	X	X	X	X	X	X
MW-202	MW-202	N	T	L2142416 / L2142417	L2142416-01 / L2142417-01	8/6/2021	X	X	X	X	X	-	-
MW-301	MW-301	N	T	JC70668	JC70668-1	7/26/2018	X	X	X	X	X	X	X
MW-301	MW-301	N	T	JC83999	JC83999-4	3/7/2019	X	X	X	X	X	X	X
MW-301	MW-301	N	T	JD25615 / JD25615A	JD25615-1 / JD25615-1A	5/26/2021	X	X	X	X	X	X	X
MW-301	DUP	FD	T	JD25615 / JD25615A	JD25615-2 / JD25615-2A	5/26/2021	X	X	X	X	X	X	X
MW-301	MW-301-F	N	D	JD25646 / JD25646A	JD25646-1F / JD25646-1FAR	5/26/2021	X	X	X	X	X	X	X
MW-301	DUP-F	FD	D	JD25646 / JD25646A	JD25646-3F / JD25646-3FAR	5/26/2021	X	X	X	X	X	X	X
MW-301	MW-301	N	T	L2142529 / L2142530	L2142529-01 / L2142530-01	8/9/2021	X	X	X	X	X	-	-
MW-301	DUP	FD	T	L2142529 / L2142530	L2142529-02 / L2142530-02	8/9/2021	X	X	X	X	X	-	-
MW-302	MW-302	N	T	JC60715 / JC60715A	JC60715-4 / JC60715-4A	2/13/2018	X	X	X	X	X	X	X
MW-302	MW-302	N	T	JC70668	JC70668-2	7/26/2018	X	X	X	X	X	X	X
MW-302	FIELD DUPE	FD	T	JC70668	JC70668-3	7/26/2018	X	X	X	X	X	X	X
MW-302	MW-302	N	T	JC83999	JC83999-3	3/7/2019	X	X	X	X	X	X	X
MW-302	MW-302	N	T	JD25615 / JD25615A	JD25615-3 / JD25615-3A	5/26/2021	X	X	X	X	X	X	X
MW-302	MW-302-F	N	D	JD25646 / JD25646A	JD25646-2F / JD25646-2FAR	5/26/2021	X	X	X	X	X	X	X
MW-302	MW-302	N	T	L2142416 / L2142417	L2142416-03 / L2142417-03	8/6/2021	X	X	X	X	X	-	-
MW-303	MW-303	N	T	JC83999	JC83999-6	3/7/2019	X	X	X	X	X	X	X
MW-303	MW-303	N	T	JC85832 / JC85832A	JC85832-1 / JC85832-1A	4/5/2019	X	X	X	X	X	X	X
MW-303	DUP	FD	T	JC85832 / JC85832A	JC85832-2 / JC85832-2A	4/5/2019	X	X	X	X	X	X	X
MW-303	MW-303	N	T	L1953510	L1953510-01	11/8/2019	X	-	-	-	-	-	-
MW-303	Dup	FD	T	L1953510	L1953510-02	11/8/2019	X	-	-	-	-	-	-

NOTES:
Eh - oxidation-reduction potential (ORP)
SDG - sample delivery group
Fractions:
D - dissolved/filtered
T - total/unfiltered
Sample Types:
N - normal environmental sample
FD - field duplicate sample
"-" indicates the sample was not analyzed for this parameter

Table 5
Quality Assurance/Quality Control Sample Summary
Hudson County Chromate Site 63, Burma Road, Jersey City
NJDEP SRP ID G000008691

Sample ID	Sample Type	Fraction	Lab SDG	Laboratory Sample ID	Sample Date	Antimony	Total Chromium	Nickel	Thallium	Vanadium	Hexavalent Chromium	Eh/pH
FB	EB	T	JC24458	JC24458-5	7/21/2016	X	X	X	X	X	X	X
FB01	EB	T	JC47790	JC47790-4	7/26/2017	X	X	X	X	X	X	X
FB-01	EB	T	JC60715	JC60715-5	2/13/2018	X	X	X	X	X	X	X
FIELD BLANK	EB	T	JC70668	JC70668-4	7/26/2018	X	X	X	X	X	X	X
FB	EB	T	JC83999	JC83999-5	3/7/2019	X	X	X	X	X	X	X
FB	EB	T	JC85832	JC85832-3	4/5/2019	X	X	X	X	X	X	X
FB	EB	T	L1953510	L1953510-03	11/8/2019	X	-	-	-	-	-	-
FB	EB	T	JD25615	JD25615-4	5/26/2021	X	X	X	X	X	X	X
FB-01	EB	T	L2142417	L2142417-02	8/6/2021	X	X	X	X	X	X	X

NOTES:
Eh - oxidation-reduction potential (ORP)
SDG - sample delivery group
Fractions:
D - dissolved/filtered
T - total/unfiltered
Sample Types:
EB - equipment blank

Table 6
Post-Soil Remediation Groundwater Analytical Results
Hudson County Chromate Site 63, Burma Road, Jersey City
NJDEP SRP ID G000008691

						Analyte CAS GWQS Units	Antimony 7740-36-0 6 ug/L	Chromium 7440-47-3 70 ug/L	Hexavalent Chromium 18540-29-9 70 ug/L	Nickel 7440-02-0 100 ug/L	Thallium 7440-28-0 2 ug/L	Vanadium 7440-62-2 60 ug/L
Monitoring Well ID	**Sample ID**	**Sample Type**	**Fraction**	**Lab SDG**	**Laboratory Sample ID**	**Sample Date**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
MW-12	MW-12	N	T	JC47790	JC47790-7	7/26/2017	<6.0 U	<10 U	<10 UJ	<10 U	<2.0 U	<50 U
MW-101	MW101	N	T	JC22847	JC22847-2A	6/23/2016	<6.0 U	22.1	<10 U	39	<2.0 U	**1,090**
MW-101	MW101	N	T	JC24458	JC24458-3A	7/21/2016	<6.0 U	10.3	<10 U	17.2	<2.0 U	**561**
MW-101	DUP	FD	T	JC24458	JC24458-4A	7/21/2016	<6.0 U	10.1	<10 U	18.6	<2.0 U	**556**
MW-101	MW-101	N	T	JC47790	JC47790-1	7/26/2017	<6.0 U	20	<10 UJ	34.1	<2.0 U	**496**
MW-102	MW102	N	T	JC22847	JC22847-3A	6/23/2016	<6.0 U	<10 U	<10 U	<10 U	<2.0 U	<50 U
MW-102	DUP01	FD	T	JC22847	JC22847-4A	6/23/2016	<6.0 U	<10 U	<10 U	<10 U	<2.0 U	<50 U
MW-102	MW102	N	T	JC24458	JC24458-2A	7/21/2016	<6.0 U	11.8	<10 U	13.4	<2.0 U	<50 U
MW-102	MW-102	N	T	JC47790	JC47790-2	7/26/2017	<6.0 U	<10 U	<10 UJ	<10 U	<2.0 U	<50 U
MW-102	DUP	FD	T	JC47790	JC47790-3	7/26/2017	<6.0 U	<10 U	<10 UJ	<10 U	<2.0 U	<50 U
MW-103	MW103	N	T	JC22847	JC22847-1A	6/23/2016	<6.0 U	10	<10 U	14.8	<2.0 U	**173**
MW-103	MW103	N	T	JC24458	JC24458-1A	7/21/2016	<6.0 U	11.1	<10 U	11.1	<2.0 U	**121**
MW-103	MW-103	N	T	JC47790	JC47790-8	7/26/2017	<6.0 U	<10 U	<10 UJ	<10 U	<2.0 U	**128**
MW-201	MW-201	N	T	JC47790	JC47790-6	7/26/2017	<6.0 U	<10 U	<10 UJ	<10 U	<2.0 U	<50 U
MW-201	MW-201	N	T	JC60715	JC60715-3A	2/13/2018	<6.0 U	<10 U	<10 U	<10 U	<2.0 U	<50 U
MW-202	MW-202	N	T	JC47790	JC47790-5	7/26/2017	**35**	**1,650**	<10 UJ	42.4	<20 U	**490**
MW-202	MW-202	N	T	JC60715	JC60715-1A	2/13/2018	**45.4**	**827**	<10 U	<100 U	<20 U	**268**
MW-202	DUP01	FD	T	JC60715	JC60715-2A	2/13/2018	**43**	**770**	<10 U	<100 U	<20 U	**261**
MW-202	MW-202	N	T	JC83999	JC83999-1	3/7/2019	**28.1**	**778**	<10 U	27.7 EJ	<1.0 U	**191**
MW-202	MW-DUP	FD	T	JC83999	JC83999-2	3/7/2019	**28.4**	**848**	<10 U	26.1 EJ	<1.0 U	**166**
MW-202	MW-202	N	T	L2142416 / L2142417	L2142416-01 / L2142417-01	8/6/2021	**17.68**	**394.4**	<10 U	19.36	<1.0 U	**185.2**
MW-301	MW-301	N	T	JC70668	JC70668-1	7/26/2018	<20 U	**1,120**	<10 UNJ-	46	<5.0 U	**684**
MW-301	MW-301	N	T	JC83999	JC83999-4	3/7/2019	<4 U	**267 EJ**	<10 U	14.2 EJ	<2.5 U	**200**
MW-301	MW-301	N	T	JD25615	JD25615-1 / JD25615-1A	5/26/2021	<20 U	**533 J**	<50 U	18.1	<5.0 U	**278 J**
MW-301	DUP	FD	T	JD25615	JD25615-2 / JD25615-2A	5/26/2021	<20 U	**1,440 J**	<50 U	24.2	<5 U	**377 J**
MW-301	MW-301-F	N	D	JD25646	JD25646-1F / JD25646-1FAR	5/26/2021	<60 U	**292**	<50 U	<100	<100 U	<500 U
MW-301	DUP-F	FD	D	JD25646	JD25646-3F / JD25646-3FAR	5/26/2021	<6.0 U	<10 U	<10 U	<10 U	<10 U	<50 U
MW-301	MW-301	N	T	L2142529 / L2142530	L2142529-01 / L2142530-01	8/9/2021	<20 U	**264.4**	5 J	15.43	<5 U	**299**
MW-301	DUP	FD	T	L2142529 / L2142530	L2142529-02 / L2142530-02	8/9/2021	<20 U	**257.2**	<50 U	15.72	<5 U	**285.7**
MW-302	MW-302	N	T	JC60715	JC60715-4A	2/13/2018	<6.0 U	<10 U	<10 U	<10 U	<2.0 U	<50 U
MW-302	MW-302	N	T	JC70668	JC70668-2	7/26/2018	<10 U	7.7	<10 NJ-	<5.0 U	<2.5 U	6.1
MW-302	FIELD DUPE	FD	T	JC70668	JC70668-3	7/26/2018	<10 U	8.5	<10 NJ-	<5.0 U	<2.5 U	6.9
MW-302	MW-302	N	T	JC83999	JC83999-3	3/7/2019	<4.0 U	13	<10 U	<2.8 EJ	<1.0 U	9.9
MW-302	MW-302	N	T	JD25615	JD25615-3 / JD25615-3A	5/26/2021	<4.0 U	24.7 R	<50 U	5.5	<1.0 U	15.9
MW-302	MW-302-F	N	D	JD25646	JD25646-2F / JD25646-2FAR	5/26/2021	<60 U	**326 R**	<50 U	<100	<100 U	<500 U
MW-302	MW-302	N	T	L2142416 / L2142417	L2142416-03 / L2142417-03	8/6/2021	0.58 J	29.02	<10 U	2.48	<1 UB	21.68
MW-303	MW-303	N	T	JC83999	JC83999-6	3/7/2019	**7.1**	9.9	<10 U	10.9 EJ	<2.5 U	14.8
MW-303	MW-303	N	T	JC85832	JC85832-1	4/5/2019	<4.0 U	<2.0 U	<10 U	<2.0 U	<1.0 U	<2.0 UEJ
MW-303	DUP	FD	T	JC85832	JC85832-2	4/5/2019	<4.0 U	<2.0 U	<10 U	<2.0 U	<1.0 U	<2.0 UEJ
MW-303	MW-303	N	T	L1953510	L1953510-01	11/8/2019	**6.3**	-	-	-	-	-
MW-303	Dup	FD	T	L1953510	L1953510-02	11/8/2019	**6.3**	-	-	-	-	-

Table 6
Post-Soil Remediation Groundwater Analytical Results
Hudson County Chromate Site 63, Burma Road, Jersey City
NJDEP SRP ID G000008691

NOTES:

1. Results may be reporting as less than the MDL or RL, but above the associated regulatory standard when dilution is required due to the presence of a significant quantity of a target or non-target analyte, or an interference from a target or non-target analyte. The presence of other substances, or combinations of other substances in a sample can impact whether an analytical method can be used to achieve the lowest possible RL.

2. Bold - Indicates exceedance of NJDEP's GWQS.

3. A " - " indicates that the sample was not analyzed for the analyte.

ABBREVIATIONS:

CAS RN - Chemical Abstract Service Registry Number

CCPW - Chromate Chemical Production Waste

Fractions:

D - dissolved/filtered

T - total/unfiltered

ft - feet

GWQS - Groundwater Quality Standard

MDL - method detection limit

N/A - not applicable

NJDEP - New Jersey Department of Environmental Protection

RL - reporting limit

Sample Types:

N - normal environmental sample

FD - field duplicate sample

SDG - sample delivery group

µg/L: micrograms per liter

QUALIFIERS:

U - Indicates that the analyte was not detected in the sample above the sample RL.

J - Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample. J+ or J - is used when the direction of bias can be determined.

EJ - Serial diulation outside control limits; result is an estimated value

UB - The analyte concentration is less than or equal to three (3) times the concentration in the associated method/preparation blank. The presence of the analyte in the sample is negated due to laboratory blank contamination

R - The result is rejected following DV review.

Table 7
Analytical Results from Quality Assurance Samples
Hudson County Chromate Site 63, Burma Road, Jersey City
NJDEP SRP ID G000008691

					Analyte	Antimony	Chromium	Hexavalent Chromium	Nickel	Thallium	Vanadium
					CAS	7740-36-0	7440-47-3	18540-29-9	7440-02-0	7440-28-0	7440-62-2
					GWQS	6	70	70	100	2	60
					Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample ID	**Sample Type**	**Fraction**	**Lab SDG**	**Laboratory Sample ID**	**Sample Date**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
FB	EB	T	JC24458 / JC24458A	JC24458-5 / JC24458-5A	7/21/2016	< 6 U	< 10 U	< 10 U	< 10 U	< 2 U	< 50 U
FB01	EB	T	JC47790	JC47790-4	7/26/2017	< 6 U	< 10 U	< 10 J	< 10 U	< 2 U	< 50 U
FB-01	EB	T	JC60715 / JC60715A	JC60715-5 / JC60715-5A	2/13/2018	< 6 U	< 10 U	< 10 U	< 10 U	< 2 U	< 50 U
FIELD BLANK	EB	T	JC70668	JC70668-4	7/26/2018	< 4 U	< 2 U	< 10 NJ-	< 2 U	< 1 U	< 2 U
FB	EB	T	JC83999	JC83999-5	3/7/2019	< 4 U	< 2 U	< 10 U	2.4 EJ	< 1 U	< 2 U
FB	EB	T	JC85832	JC85832-3 / JC85832-3A	4/5/2019	< 4 U	< 2 U	< 10 U	< 2 U	< 1 U	< 2 EJ
FB	EB	T	L1953510	L1953510-03	11/8/2019	< 4 U	-	-	-	-	-
FB	EB	T	JD25615	JD25615-4 / JD25615-4A	5/26/2021	< 4 U	< 2 U	< 10 U	< 2 U	< 1 U	< 2 U
FB-01	EB	T	L2142417	L2142417-02	8/6/2021	< 4 U	0.4377	< 10 U	< 2 U	< 1 U	< 5 U

NOTES:

1. A " - " indicates that the sample was not analyzed for the analyte.

ABBREVIATIONS:

CAS RN - Chemical Abstracts Service Registry Number

Fractions:

D - dissolved/filtered

T - total/unfiltered

GWQS - Groundwater Quality Standard

NJDEP - New Jersey Department of Environmental Protection

RL - reporting limit

Sample Types:

EB - equipment blank/field blank

SDG - sample delivery group

µg/L: micrograms per liter

QUALIFIERS:

NJ- : The matrix spike sample recovery in the associated QC sample is below QC limits; the result is estimated and may be biased low.

J : The reported result is an estimated value.

U : The analyte was analyzed, but was not detected at the stated RL.

EJ : The reported value is estimated because of the presence of interference; indeterminate bias direction.

Table 8
Compliance Averaging: MW-303
Hudson County Chromate Site 63
1 Burma Road
Jersey City, New Jersey
PI Number: G000008691

Client Sample ID: Lab Sample ID: Date Sampled: Matrix:	CAS#	Units	GWQS	MW-303 JC83999-6 3/7/2019 Ground Water	MW-303 JC85832-1 4/5/2019 Ground Water	MW-303 L1953510-01 11/8/2019 Ground Water	Compliance Average Calculation	
Metals Analysis								
Antimony	7440-36-0	ug/l	6	**7.1**	<4.0	**6.3**	4.47	Data Meets GWQS

Notes:

CAS # - Chemical Abstract Service Registry Number

GWQS - New Jersey Department of Environmental Protection Groundwater Quality Standards (N.J.A.C. 7:9C) (last amended August 9, 2018)

ug/l - micrograms per liter

Compliance Averaging completing using the Arithmetic Mean. Non-detect values entered as zero (0) in accordance with the NJDEP *Technical Guidance for the Attainment of Remediation Standards and Site-Specific Criteria* (September 2012, Version 1).

Bold indicates an exceedance of the NJDEP GWQS

Analytical Data Qualifiers:

< = The analyte was not detected at the stated reporting limit.

Leavey, Crystal L.

From: Amin, Prabal <Prabal.Amin@WestonSolutions.com>
Sent: Friday, October 4, 2019 11:22 AM
To: Leavey, Crystal L.; Amend-Babcock, Laura; Costa, Ralph; Feinberg, Richard [C]; Doyle, David
Cc: Overmyer, Jody
Subject: RE: HCC Site 63 - RIRA/RAWP for Groundwater Technical Discussion - Meeting Minutes

EXTERNAL SENDER

Crystal, we have no comments on these meeting minutes.

Thanks.
Prabal

Prabal N. Amin, P.E., LSRP
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From: Leavey, Crystal L. [mailto:crystal.leavey@aptim.com]
Sent: Friday, September 27, 2019 1:56 PM
To: Amin, Prabal <Prabal.Amin@WestonSolutions.com>; Amend-Babcock, Laura <Laura.Amend-Babcock@WestonSolutions.com>; Costa, Ralph <Ralph.Costa@WestonSolutions.com>; Feinberg, Richard [C] <feinberg@ppg.com>; Doyle, David <David.Doyle@dep.nj.gov>
Cc: Overmyer, Jody <overmyer@ppg.com>
Subject: HCC Site 63 - RIRA/RAWP for Groundwater Technical Discussion - Meeting Minutes

**** External Email ****

On behalf of PPG, APTIM has prepared the attached for your records to document the Technical Discussion following receipt of comments from the Department on the May 2019 Draft *Remedial Investigation Report Addendum and Remedial Action Work Plan for Groundwater* for HCC Site 63.

CRYSTAL L. LEAVEY, LSRP
Client Program Manager / Applied Science & Engineering Office Lead

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Meeting Minutes

Meeting Information

Objective: Technical Discussion regarding RI conclusions / plume limits and capillary break evaluation NGA Document 63-011 - *Draft Remedial Investigation Report Addendum and Remedial Action Work Plan for Groundwater*, May 2019 *(*RIRA/RAWP)

Date:	9/19/2019	**Location:**	Skype Meeting/Conf Call
Time:	9:00 – 10:00 a.m.	**Submitted by:**	Crystal L. Leavey
Attendees:	R. Feinberg, PPG C. Leavey, APTIM D. Doyle, NJDEP P. Amin, Weston Solutions L. Amend-Babcock, Weston Solutions R. Costa, Weston Solutions		

Discussion Items

1 Need for a capillary break in connection with remaining CCPW-related impacts

2 Conclusions of the remedial investigation and the defined plume limits / compliance averaging of MW-303

Decisions

1

a. Revised RIRA/RAWP should include a discussion of a need for capillary break due to the presence of total chromium concentrations in excess of 70 parts per billion (ppb)
   i. NJDEP recommended creating an isopleth figure for total chromium to identify area around MW-202, MW-301, and historical monitoring well MW-4. The area will be identified as the area requiring a capillary break
   ii. Multiple lines of evidence should be included in revised RIRA/RAWP to support limiting area of capillary break
      a. All waste was removed from Site 63 (Unrestricted Use Consent Judgement Compliance for CCPW-related soil contamination)
      b. Groundwater contamination considered to be "emanating from Site 63 pursuant to January 2018 Settlement Agreement
   iii. Can propose to complete visual inspections of capillary break area on frequency similar to engineering control at Site 65

2

a. Additional round of groundwater data required from MW-303 for antimony to demonstrate compliance with GWQS
   i. Initial round of sampling in March 2019 was marginally above standard;
   ii. 2nd round in April 2019 was non-detect at 4 ppb;
   iii. 3rd sample could be used to demonstrate compliance through averaging if collected soon based on initial low-level exceedance

b. Limits of defined plume were requested to include vanadium exceedances in MW-303
c. Interpolation of contaminant concentrations will be acceptable to reduce extent of CEA/WRA, provided they take groundwater flow direction into consideration.
d. PPG inquired if the CEA/WRA could be lifted if groundwater was treated
    i. D. Doyle indicated that groundwater treatment is always an option to reduce contaminant concentrations.

Table 9
Summary of Post-Soil Remediation Total and Hexavalent Chromium Results
Hudson County Chromate Site 63, Burma Road, Jersey City
NJDEP SRP ID G000008691

						Analyte CAS GWQS Units	Chromium 7440-47-3 70 ug/L	Hexavalent Chromium 18540-29-9 70 ug/L
Monitoring Well ID	**Sample ID**	**Sample Type**	**Fraction**	**Lab SDG**	**Laboratory Sample ID**	**Sample Date**	**Result**	**Result**
MW-12	MW-12	N	T	JC47790	JC47790-7	7/26/2017	<10 U	<10 UJ
MW-101	MW101	N	T	JC22847	JC22847-2A	6/23/2016	22.1	<10 U
MW-101	MW101	N	T	JC24458	JC24458-3A	7/21/2016	10.3	<10 U
MW-101	DUP	FD	T	JC24458	JC24458-4A	7/21/2016	10.1	<10 U
MW-101	MW-101	N	T	JC47790	JC47790-1	7/26/2017	20	<10 UJ
MW-102	MW102	N	T	JC22847	JC22847-3A	6/23/2016	<10 U	<10 U
MW-102	DUP01	FD	T	JC22847	JC22847-4A	6/23/2016	<10 U	<10 U
MW-102	MW102	N	T	JC24458	JC24458-2A	7/21/2016	11.8	<10 U
MW-102	MW-102	N	T	JC47790	JC47790-2	7/26/2017	<10 U	<10 UJ
MW-102	DUP	FD	T	JC47790	JC47790-3	7/26/2017	<10 U	<10 UJ
MW-103	MW103	N	T	JC22847	JC22847-1A	6/23/2016	10	<10 U
MW-103	MW103	N	T	JC24458	JC24458-1A	7/21/2016	11.1	<10 U
MW-103	MW-103	N	T	JC47790	JC47790-8	7/26/2017	<10 U	<10 UJ
MW-201	MW-201	N	T	JC47790	JC47790-6	7/26/2017	<10 U	<10 UJ
MW-201	MW-201	N	T	JC60715	JC60715-3A	2/13/2018	<10 U	<10 U
MW-202	MW-202	N	T	JC47790	JC47790-5	7/26/2017	**1,650**	<10 UJ
MW-202	MW-202	N	T	JC60715	JC60715-1A	2/13/2018	**827**	<10 U
MW-202	DUP01	FD	T	JC60715	JC60715-2A	2/13/2018	**770**	<10 U
MW-202	MW-202	N	T	JC83999	JC83999-1	3/7/2019	**778**	<10 U
MW-202	MW-DUP	FD	T	JC83999	JC83999-2	3/7/2019	**848**	<10 U
MW-202	MW-202	N	T	L2142416 / L2142417	L2142416-01 / L2142417-01	8/6/2021	**394.4**	<10 U
MW-301	MW-301	N	T	JC70668	JC70668-1	7/26/2018	**1,120**	<10 UNJ-
MW-301	MW-301	N	T	JC83999	JC83999-4	3/7/2019	**267 EJ**	<10 U
MW-301	MW-301	N	T	JD25615	JD25615-1 / JD25615-1A	5/26/2021	**533 J**	<50 U
MW-301	DUP	FD	T	JD25615	JD25615-2 / JD25615-2A	5/26/2021	**1,440 J**	<50 U
MW-301	MW-301-F	N	D	JD25646	JD25646-1F / JD25646-1FAR	5/26/2021	**292**	<50 U
MW-301	DUP-F	FD	D	JD25646	JD25646-3F / JD25646-3FAR	5/26/2021	<10 U	<10 U
MW-301	MW-301	N	T	L2142529 / L2142530	L2142529-01 / L2142530-01	8/9/2021	**264.4**	5 J
MW-301	DUP	FD	T	L2142529 / L2142530	L2142529-02 / L2142530-02	8/9/2021	**257.2**	<50 U
MW-302	MW-302	N	T	JC60715	JC60715-4A	2/13/2018	<10 U	<10 U
MW-302	MW-302	N	T	JC70668	JC70668-2	7/26/2018	7.7	<10 NJ-
MW-302	FIELD DUPE	FD	T	JC70668	JC70668-3	7/26/2018	8.5	<10 NJ-
MW-302	MW-302	N	T	JC83999	JC83999-3	3/7/2019	13	<10 U
MW-302	MW-302	N	T	JD25615	JD25615-3 / JD25615-3A	5/26/2021	24.7 R	<50 U
MW-302	MW-302-F	N	D	JD25646	JD25646-2F / JD25646-2FAR	5/26/2021	**326 R**	<50 U
MW-302	MW-302	N	T	L2142416 / L2142417	L2142416-03 / L2142417-03	8/6/2021	29.02	<10 U
MW-303	MW-303	N	T	JC83999	JC83999-6	3/7/2019	9.9	<10 U
MW-303	MW-303	N	T	JC85832	JC85832-1	4/5/2019	<2.0 U	<10 U
MW-303	DUP	FD	T	JC85832	JC85832-2	4/5/2019	<2.0 U	<10 U
MW-303	MW-303	N	T	L1953510	L1953510-01	11/8/2019	-	-
MW-303	Dup	FD	T	L1953510	L1953510-02	11/8/2019	-	-

Table 9
Summary of Post-Soil Remediation Total and Hexavalent Chromium Results
Hudson County Chromate Site 63, Burma Road, Jersey City
NJDEP SRP ID G000008691

NOTES:

1. Results may be reporting as less than the MDL or RL, but above the associated regulatory standard when dilution is required due to the presence of a significant quantity of a target or non-target analyte, or an interference from a target or non-target analyte. The presence of other substances, or combinations of other substances in a sample can impact whether an analytical method can be used to achieve the lowest possible RL.

2. Bold - Indicates exceedance of NJDEP's GWQS.

3. A " - " indicates that the sample was not analyzed for the analyte.

Onsite monitoring wells

ABBREVIATIONS:

CAS RN - Chemical Abstract Service Registry Number

CCPW - Chromate Chemical Production Waste

Fractions:

D - dissolved/filtered

T - total/unfiltered

ft - feet

GWQS - Groundwater Quality Standard

MDL - method detection limit

N/A - not applicable

NJDEP - New Jersey Department of Environmental Protection

RL - reporting limit

Sample Types:

N - normal environmental sample

FD - field duplicate sample

SDG - sample delivery group

µg/L: micrograms per liter

QUALIFIERS:

U - Indicates that the analyte was not detected in the sample above the sample RL.

J - Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample. J+ or J - is used when the direction of bias can be determined.

EJ - Serial diulation outside control limits; result is an estimated value

R - The result is rejected following DV review.

Table 10
Total and Hexavalent Chromium Concentrations in Soil: Site 65
Hudson County Chromate Site 63, Burma Road, Jersey City
NJDEP SRP ID G000008691

					Analyte	Chromium		Hexavalent Chromium	
					CAS	7440-47-3		18540-29-9	
					CrSCC (Residential/Non-Residential)	NC / 120,000		20 / 20	
					Units	mg/kg		mg/kg	
Sample Location	**Sample ID**	**Laboratory Sample ID**	**Sample Date**	**Sample Depth (ft bgs)**	**Sample Elevation (ft NAVD88)**	**Result**	**Qualifier**	**Result**	**Qualifier**
B101W	PPG63/65_B101W	JB88134-3	2/12/2015	5.2-5.7	2.3-2.8	7,450		**132 / 106**	*NJ- / NJ+
B102W	PPG63/65_B102W	JB88308-1	2/13/2015	5.2-5.7	2.3-2.8	3,610		**28.8** / 11.1	NJ+ / *NJ+
B99W	PPG63/65_B99W	JB88086-4	2/11/2015	4.8 - 5.3	1.8 - 2.3	4,310		**72 / 283**	NJ- / *NJ-
SW18	PPG63/65_DUP	JB74463-3	8/19/2014	3.0 - 3.5	4.6 - 5.1	57.9		<0.48	NJ-
SW18	PPG63/65_SW18	JB74463-1	8/19/2014	3.0 - 3.5	4.6 - 5.1	70.5		<0.47	NJ-
BRS01	BRS01_1-1.5	JC7035-55	10/21/2015	1.0 - 1.5	6.5 - 7.0	22.6		0.81 / 0.46	NJ- / NJ-
BRS01	BRS01_3-3.5	JC7035-56	10/21/2015	3.0 - 3.5	4.5 - 5.0	68.7		<0.47 / <0.47	NJ- / NJ-
BRS01	BRS01_5-5.5	JC7035-57	10/21/2015	5.0 - 5.5	2.5 - 3.0	19.2		<0.51 / <0.51	NJ- / NJ-
BRS01	BRS01_7-7.5	JC7035-58	10/21/2015	7.0 - 7.5	0.5 - 1.0	27.7		0.55 / <0.51	NJ- / NJ-
BRS01	BRS01_9-9.5	JC7035-59	10/21/2015	9.0 - 9.5	-1.0 - (-1.5)	24.1		<0.45 / 0.77	NJ- / NJ-
BRS5A-A	BRS5A-A 10-10.5	JC16626-25A	3/18/2016	10.0 - 10.5	-2.0 - (-2.5)	893		0.98	
BRS5A-A	BRS5A-A 8.5-9.0	JC16626-22RA	3/18/2016	8.5 - 9.0	-0.5 - (-1.0)	19,600/18,300	- / EJ	4.5 / <0.52	NJ- / NR
BRS5A-A	BRS5A-A 8.5-9.0	JC16626-22RA	3/18/2016	8.5 - 9.0	-0.5 - (-1.0)	-		**45.7**	
BRS5A-A	BRS5A-A 9.5-10	JC16626-24A	3/18/2016	9.5 - 10.0	-1.5 - (-2.0)	82,100		<0.53	
BRS5A-A	BRS5A-A 9-9.5	JC16626-23A	3/18/2016	9.0 - 9.5	-1.0 - (-1.5)	48,300		0.52	
SW101	PPG63/65_SW101	JB88134-1	2/12/2015	2.8 - 3.3	4.7 - 5.2	12,100		<0.48 / 12.6	*NJ- / NJ+
SW102	PPG63/65_SW102	JB88134-2	2/12/2015	5.5 - 6.0	2.0 - 2.5	11,000		1.5 / **101**	*NJ- / NJ+
SW103	PPG63/65_SW103	JB88308-2	2/13/2015	3.0 - 3.5	4.5 - 5.0	783		0.75 / 10.5	NJ+ / *NJ+
SW98	PPG63/65_SW98	JB88086-1	2/11/2015	2.3 - 2.8	5.2 - 5.7	12,900		**90.3** / **221**	NJ- / *NJ-
SW99	PPG63/65_SW99	JB88086-2	2/11/2015	6.2 - 6.7	1.5 - 2.0	8,500		<0.57 / 19.7	NR / *NJ-
063_Z005	063_Z005_0.5		12/21/2012	0.5	7.0	9.6		<0.8	
063_Z005	063_Z005_10.0		12/21/2012	10	-2.5	245		<1.4	
063_Z005	063_Z005_15.0		12/21/2012	15	-8.5	21.8		<0.81	
063_Z005	063_Z005_20.0		12/21/2012	20	-12.5	11.6		<0.85	
063_Z005	063_Z005_5.0		12/21/2012	5	2.5	860		<0.95	
BRN_3	BRN_3 2.5-3.0	JB97557-33	6/19/2015	2.5 - 3.0	5 - 5.5	82.7		<0.53	NJ-
BRN_3	BRN_3 5-5.5	JB97557-34	6/19/2015	5.0 - 5.5	2.5 - 3.0	77.4		1.1	NJ-
BRN_3	BRN_3 7.5-8.0	JB97557-35	6/19/2015	7.5 - 8.0	0.0 - 0.5	18.5		<0.54	NJ-
BRN_3	BRN_3 9.5-10.0	JB97557-36	6/19/2015	9.5 - 10.0	-1.5 - (- 2.0)	15		<0.48	NJ-
BRN02	BRN02_1-1.5	JC7286-59A	10/26/2015	1 - 1.5	6.5 - 7	31		1.1 / 0.91	NJ- / NJ-
BRN02	BRN02_3-3.5	JC7286-60A	10/26/2015	3 - 3.5	4.5 - 5	50		0.64 / 0.52	NJ- / NJ-
BRN02	BRN02_5-5.5	JC7286-61A	10/26/2015	5 - 5.5	2.5 - 3	22		0.8	
BRN02	BRN02_7-7.5	JC7286-62A	10/26/2015	7 - 7.5	0.5 - 1	7		<0.49	
BRN02	BRN02_8-8.5	JC7286-63A	10/26/2015	8 - 8.5	- 0.5 - 0	7.4		<0.44	
BRN02A	BRN02A_1.5-2	JC7286-65A	10/26/2015	1.5 - 2	6.0 - 6.5	10		<0.41	U
BRN02A	BRN02A_4-4.5	JC7286-66A	10/26/2015	4.0 - 4.5	3.5 - 4.0	16.3		0.47	
BRN02A	BRN02A_5.5-6	JC7286-67A	10/26/2015	5.5 - 6.0	2.0 - 2.5	21.5		0.84	
BRN02A	BRN02A_7-7.5	JC7286-68A	10/26/2015	7.0 - 7.5	0.5 - 1.0	24.7		0.75	
BRN04A	BRN04A_0.5-1	JC7035-27	10/23/2015	0.5 - 1.0	7 - 7.5	49.7	EJ	16.2 / 0.44	NJ- / NJ-
BRN04A	BRN04A_1.6-2.1	JC7035-28	10/23/2015	1.6 - 2.1	5.9 - 6.4	63	EJ	2.3 / <0.48	NJ- / NJ-
BRN04A	BRN04A_2.2-2.7	JC7035-29	10/23/2015	2.2 - 2.7	5.3 - 5.8	66.3	EJ	2.4 / <0.52	NJ- / NJ-
BRN04A	BRN04A_4.6-5.4	JC7035-30	10/23/2015	4.9 - 5.4	2.6 - 3.1	33.3	EJ	2.7 / 0.68	NJ- / NJ-
BRN04A	BRN04A_8.5-9	JC7035-31	10/23/2015	8.5 - 9.0	0.5	2,360	EJ	**30.8 / 15.9**	NJ- / NJ-
BRN09	BRN09_0.5-1	JC7286-1A	10/21/2015	0.5 - 1.0	7 - 7.5	57.3		0.96 / <0.47	NJ- / NJ-
BRN09	BRN09_2.5-3	JC7286-2A	10/21/2015	2.5 - 3.0	5 - 5.5	52.7		0.99 / <0.48	NJ- / NJ-
BRN09	BRN09_7.5-8	JC7286-3A	10/21/2015	7.5 - 8.0	0 - 0.5	8,260		12.3 / <0.56	NJ- / NJ-
BRN09	BRN09_9.5-10	JC7286-4A	10/21/2015	9.5 - 10.0	0.5	41.6		0.74 / <0.48	NJ- / NJ-
BRN09A	BRN09A_1-1.5	JC7286-5A	10/21/2015	1.0 - 1.5	6.5 - 7.0	37.4		1.2 / <0.44	NJ- / NJ-
BRN09A	BRN09A_5-5.5	JC7286-6A	10/21/2015	5.0 - 5.5	2.5 - 3.0	203		0.88 / <0.52	NJ- / NJ-
BRN09A	BRN09A_7-7.5	JC7286-7A	10/21/2015	7.0 - 7.5	0.5 - 1.0	19.3		<0.66 / <0.66	NJ- / NJ-
BRN09A	BRN09A_9-9.5	JC7286-8A	10/21/2015	9.0 - 9.5	-1.0 - (-1.5)	25.8		2 / <0.72	NJ- / NJ-
BRN02A	BRN2A_9.5-10	JC7286-75A	10/26/2015	9.5 - 10.0	-1.5 - (- 2.0)	24.3		<0.45	U
BRN4A-A	BRN4A-A 8.5-9	JC16626-26RA	3/18/2016	8.5 - 9.0	-0.5 - (-1.0)	7,870 / 4,360	- / EJ	5.4 / **66**	NJ- / NJ-
BRN4A-A	BRN4A-A 9.5-10	JC16626-28A	3/18/2016	9.5 - 10.0	-1.5 - (-2.0)	25,000		<0.50	
BRN4A-A	BRN4A-A 9-9.5	JC16626-27A	3/18/2016	9.0 - 9.5	-1.0 - (-1.5)	2,230		**61**	
BRS_2	BRS_2 2.5-3	JB97557-21	6/19/2015	2.5 - 3.0	5.0 - 5.5	58.7		<0.50 / <0.50	NJ- / NJ-
BRS_2	BRS_2 5-5.5	JB97557-22	6/19/2015	5.0 - 5.5	2.5 - 3	3,960		<0.51	NJ-
BRS_2	BRS_2 7.5-8.0	JB97557-23	6/19/2015	7.5 - 8.0	0.0 - 0.5	10,000		<0.55	NJ-
BRS_2	BRS_2 9.5-10.0	JB97557-24	6/19/2015	9.5 - 10.0	-1.5 - (-2.0)	809		<0.54	NJ-
BRS_4	BRS_4 2-2.5	JB97557-17	6/19/2015	2.0 - 2.5	5.5 - 6.0	112		2.2	NJ-
BRS_4	BRS_4 5-5.5	JB97557-18	6/19/2015	5.0 - 5.5	2.5 - 3.0	498		<0.59 / 3	NJ- / NJ-
BRS_4	BRS_4 7.5-8.0	JB97557-19	6/19/2015	7.5 - 8.0	0.0 - 0.5	5,370		<0.48 / 1.5	NJ- / NJ-
BRS_4	BRS_4 9.5-10.0	JB97557-20	6/19/2015	9.5 - 10.0	-1.5 - (-2.0)	27.6		<0.51 / <0.51	NJ- / NJ-
BRS03	BRS03_1.6-2.1	JC7035-45	10/20/2015	1.6 - 2.1	5.9 - 6.4	103		1.4 / <0.64	NJ- / NJ-

Table 10
Total and Hexavalent Chromium Concentrations in Soil: Site 65
Hudson County Chromate Site 63, Burma Road, Jersey City
NJDEP SRP ID G000008691

					Analyte	Chromium		Hexavalent Chromium	
					CAS	7440-47-3		18540-29-9	
					CrSCC (Residential/Non-Residential)	NC / 120,000		20 / 20	
					Units	mg/kg		mg/kg	
Sample Location	**Sample ID**	**Laboratory Sample ID**	**Sample Date**	**Sample Depth (ft bgs)**	**Sample Elevation (ft NAVD88)**	**Result**	**Qualifier**	**Result**	**Qualifier**
BRS03	BRS03_2.2-2.7	JC7035-46	10/20/2015	2.2 - 2.7	5.3 - 5.8	60		0.87 / <0.62	NJ- / NJ-
BRS03	BRS03_4.6-5.4	JC7035-47	10/20/2015	4.9 - 5.4	2.6 - 3.1	1,850		7.3 / 2.2	NJ- / NJ-
BRS03	BRS03_7.5-8	JC7035-48	10/20/2015	7.5 - 8.0	0 - 0.5	13,000		0.7 / **82.2**	NJ- / NJ-
BRS03	BRS03_9.5-10	JC7035-49	10/20/2015	9.5 - 10.0	-1.5 - (-2)	44.6		<0.49 / <0.49	NJ- / NJ-
BRS03A	BRS03A_1.6-2.1	JC7035-50	10/21/2015	1.6 - 2.1	5.9 - 6.4	89		<0.60 / <0.60	NJ- / NJ-
BRS03A	BRS03A_2.2-2.7	JC7035-51	10/21/2015	2.2 - 2.7	5.3 - 5.8	36.7		2 / 1.3	NJ- / NJ-
BRS03A	BRS03A_4.6-5.4	JC7035-52	10/21/2015	4.9 - 5.4	2.6 - 3.1	14.9		<0.45 / <0.45	NJ- / NJ-
BRS03A	BRS03A_7-7.5	JC7035-53	10/21/2015	7.0 - 7.5	0.5 - 1.0	9,920		<0.54 / <0.54	NJ- / NJ-
BRS03A	BRS03A_9-9.5	JC7035-54	10/21/2015	9.0 - 9.5	-1.0 - (-1.5)	72.3		<0.47 / <0.47	NJ- / NJ-
BRS05A	BRS05A DUP05	JC7035-11	10/20/2015	8.0 - 8.5	0.0 - (- 0.5)	14,400	EJ	37.9 / 32.4	NJ- / NJ-
BRS05A	BRS05A_0.5-1	JC7035-6	10/20/2015	0.5 - 1.0	7.0 - 7.5	16.8	EJ	<0.44 / <0.44	NJ- / NJ-
BRS05A	BRS05A_2.5-3	JC7035-7	10/20/2015	2.5 - 3.0	5.0 - 5.5	73.2	EJ	<0.54 / <0.54	NJ- / NJ-
BRS05A	BRS05A_4.5-5	JC7035-8	10/20/2015	4.5 - 5.0	3.0 - 3.5	625	EJ	<0.46 / 1.9	NJ- / NJ-
BRS05A	BRS05A_6.5-7	JC7035-9	10/20/2015	6.5 - 7.0	1.0 - 1.5	8,480	EJ	2.5 / 42.8	NJ- / NJ-
BRS05A	BRS05A_8-8.5	JC7035-10	10/20/2015	8.0 - 8.5	0.0 - (- 0.5)	12,900	EJ	25.5 / 2.9	NJ- / NJ-

Notes:

Bolded Value - Indicates exceedance of NJDEP's Chromium Soil Cleanup Criteria (CrSCC)

CAS RN - Chemical Abstract Service Registry Number

mg/kg: milligrams per kilogram

Qualifier Definitions:

U - Indicates that the analyte was not detected in the sample above the sample reporting limit.

J - Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

EJ = Serial diulation outside control limits; result is an estimated value

NJ- : Matrix spike recovery below control limits; result is an estimated value with potential low bias.

N : The matrix spike sample recovery in the associated QC sample is not within QC limits.

R : The reported result is rejected .

* - Duplicate analysis not within control limits; indeterminate bias direction.

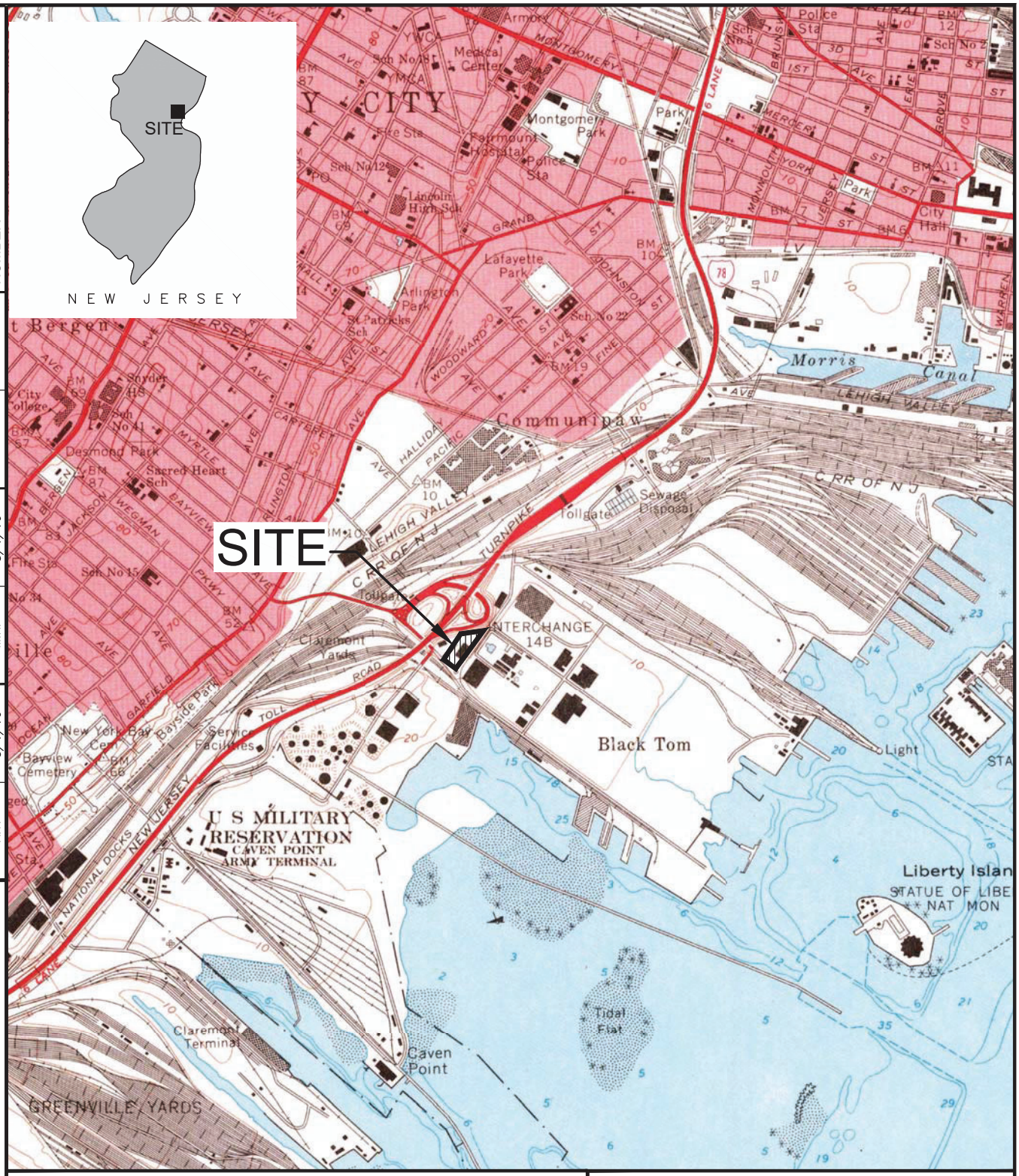
J+ - The result is estimated and may be biased high.

Site 65

Supplemental RA

Released Area

Figures



DRAWING NUMBER	APPROVED BY		CHECKED BY		DRAWN BY	
146429-A1	--	--	M.K.	3/1/16	A.Y.	3/1/16

N

SCALE

0 2000' 4000'

Site Coordinates:
Lat 40° 42' 03" N
Long 74° 04' 04" W

Sources:
JERSEY CITY, NJ USGS Topographic Quadrangle, 7.5-minute series, dated 1967

Aptim Environmental & Infrastructure, LLC
200 Horizon Center
Trenton, New Jersey 08691

FIGURE 1

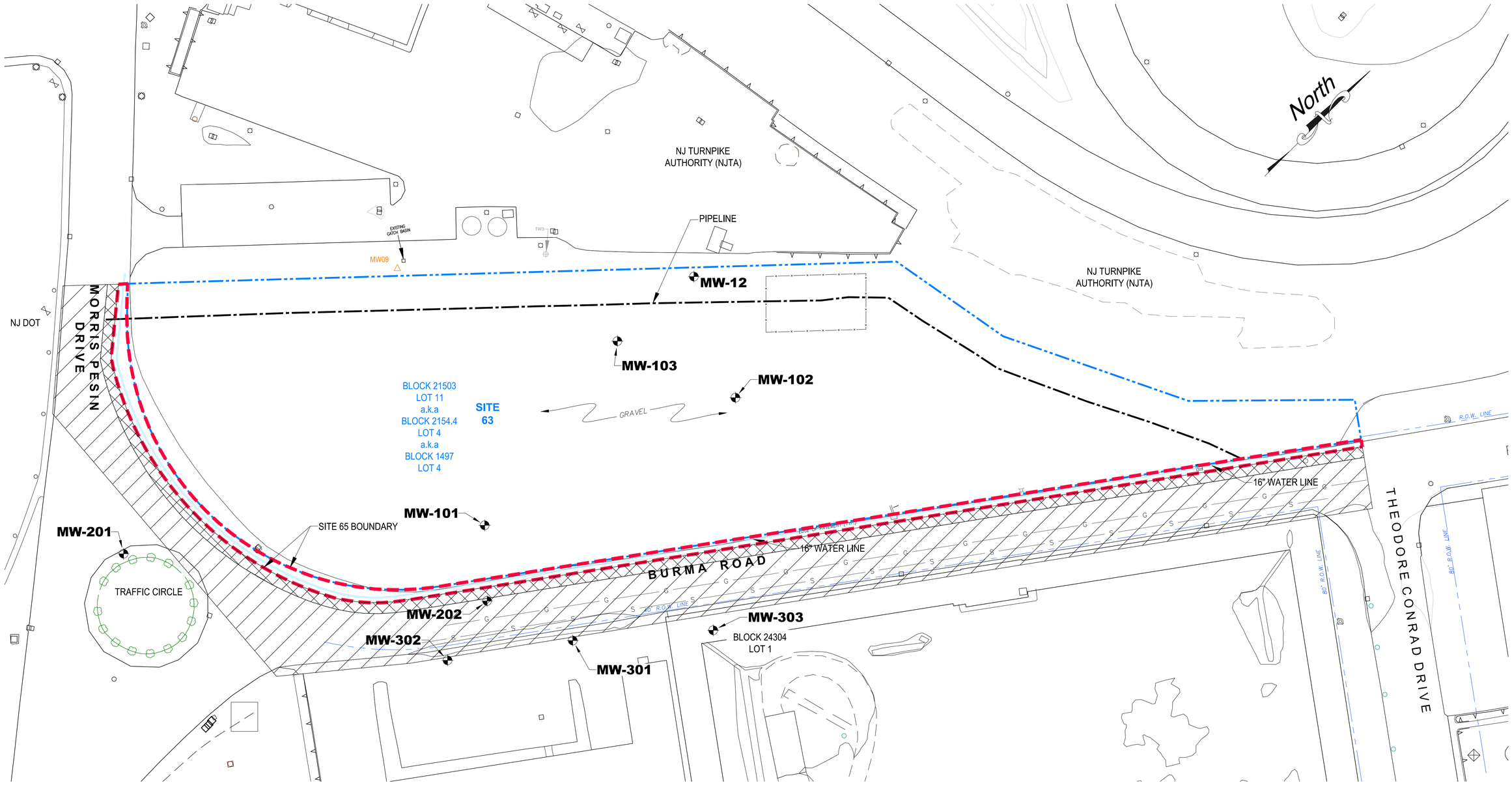
SITE LOCATION MAP

SITE 63
1 BURMA ROAD
JERSEY CITY, NEW JERSEY

File: K:\Project\146429-PPG\146429-A1.dwg
Plot Date/Time: Apr 26, 2019 - 7:59am
Plotted By: Andrius.Yanavicius

OFFICE Trenton, NJ

DRAWING NUMBER 151136-D6



Legend

- EXISTING MONITORING WELL (SITE 63)
- ABANDONED MONITORING WELL (SITE 63)
- SITE 65 BOUNDARY
- SUPPLEMENTAL REMEDIATION AREA
- RELEASED AREA
- SITE 63 BOUNDARY
- RIGHT-OF-WAY LINE
- 16" WATER LINE
- G — GAS LINE
- S — STORMWATER LINE
- PIPELINE CENTERLINE
- FENCE
- RETAINING WALL

Notes:

1. IN A NOVEMBER 2012 REMEDIAL INVESTIGATION REPORT / REMEDIAL ACTION WORK PLAN / REMEDIAL ACTION REPORT, PREPARED BY EWMA, LLC FOR 14-16 BURMA ROAD, LLC FOR INVESTIGATIONS RELATED TO SRP ID #G000062419, IT WAS REPORTED THAT MONITORING WELL MW-1 COULD NOT BE LOCATED FOR SAMPLING IN JUNE 2009 AND FEBRUARY 2011.

2. THE MONITORING WELLS ASSOCIATED WITH SRP ID #G000062419 WERE ABANDONED IN JANUARY 2013.

3. HORIZONTAL EXTENT OF CONTAMINATION BASED ON POST-SOIL REMEDIATION GROUNDWATER ANALYTICAL DATA. PRE-2016 GROUNDWATER ANALYTICAL DATA FROM MONITORING WELLS ASSOCIATED WITH HCC SITE 63 HAS BEEN EXCLUDED.

4. AOC-10 IS SITE WIDE. (NOT SHOWN)

Sources:

LIMITS OF HDPE LINER, SUBSURFACE FABRIFORM DRAINAGE STRUCTURE & STORM SEWER LOCATIONS TAKEN FROM IT CORPORATION'S DRAWING TITLED "EXTENT OF HDPE LINER", FILE NAME: GP12-017, DRAWING NUMBER 7-2, DATED JANUARY 11, 2000.

BASEMAP INFORMATION SUPPLIED BY C.T. MALE ASSOC.'S DRAWING TITLED "TOPOGRAPHIC SURVEY, SITES 63-65", DRAWING NUMBER 10.352, DATED JUNE 20,2010

LOT & BLOCK INFORMATION SOURCE:
1) HUDSON COUNTY DEPARTMENT OF PLANNING, HUDSON COUNTY, GIS SHAPEFILE, JANUARY 1,2007
2) NEW JERSEY GEOGRAPHIC INFORMATION NETWORK, MOD IV TAX PARCEL SEARCH DATABASE.

LOCATION OF UNDERGROUND WATER PIPE BASED ON SUB SURFACE UTILITY ENGINEERING MARKOUTS PERFORMED ON 11-7-17 BY MASER CONSULTING, P.A. AND FIELD MEASUREMENTS PROVIDED BY APTIM ENVIRONMENTAL & INFRASTRUCTURE ON 11-21-17.

THE SOUTHERLY AND SOUTHEASTERLY BOUNDARY OF "SITE 65" IS 3' FROM THE EDGE OF THE WATER PIPE (3'-8" FROM THE CENTER).

30 15 0 30
Scale in Feet

APTIM
Aptim Environmental & Infrastructure, Inc.
200 Horizon Center
Trenton, New Jersey 08691

DESIGNED BY: --	PPG HUDSON COUNTY, NEW JERSEY			
DRAWN BY: A.Y.	FIGURE 2 SITE 63 GROUNDWATER MONITORING WELL LOCATION PLAN			
CHECKED BY: C. Leavey	JERSEY CITY, NEW JERSEY			
APPROVED BY: C. Leavey	DATE: 12/1/21	SCALE: AS SHOWN	DRAWING NO. 151136-D6	SHEET NO. -

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Plot Date/Time: Dec 01, 2021 - 4:37pm
Plotted By: Andrew Yanochko

OFFICE Trenton, NJ

DRAWING NUMBER 151136-D2

North

NJ TURNPIKE AUTHORITY (NJTA)

PIPELINE

EXISTING CATCH BASIN

TW3

XREFS: XREFLIST

NJ DOT

MORRIS PESIN DRIVE

16" WATER LINE

VALVE STATION

MW-12
7.33

7.74
MW-103

MW-102
8.27

BLOCK 21503
LOT 11
a.k.a
BLOCK 2154.4
LOT 4
a.k.a
BLOCK 1497
LOT 4

SITE 63

GRAVEL

7.50
7.00
6.50
6.00
5.50
5.00
4.50
4.00
3.50

MW-101
5.93

MW-201
3.53

SITE 65 BOUNDARY

TRAFFIC CIRCLE

NM
MW-202

MW-302
3.93

MW-3

MW-4

MW-301
NM

MW-303
3.44
BLOCK 24304
LOT 1

NJ TURNPIKE AUTHORITY (NJTA)

R.O.W. LINE

16" WATER LINE

SITE 65

BURMA ROAD

THEODORE CONRAD DRIVE

80' R.O.W. LINE

Legend

- MONITORING WELL (SITE 63)
- HISTORICAL MONITORING WELL (14 BURMA RD)
- SITE 63 BOUNDARY (LOT 11)
- SITE 65 BOUNDARY
- SUPPLEMENTAL REMEDIATION AREA
- RELEASED AREA
- 16" WATER LINE
- G — GAS LINE
- S — STORMWATER LINE
- PIPELINE CENTERLINE
- NM — NOT MEASURED
- 3.93 — GROUNDWATER ELEVATION IN FT (MSL)
- 6.50 — GROUNDWATER CONTOUR (DASHED WERE INFERRED)
- ESTIMATED GROUNDWATER FLOW DIRECTION
- UTILITY POLE
- LP — LIGHT POLE
- SANITARY MANHOLE
- D — STORM MANHOLE
- UNKNOWN MANHOLE
- FIRE HYDRANT
- WV — WATER VALVE
- GV — GAS VALVE
- 9 — FINAL GRADE CONTOUR (IN FEET)
- W — WATER MAIN
- TREE
- TREE LINE
- SCRUB LINE
- HEDGE ROW
- X — FENCE
- RETAINING WALL

Sources:

FINAL AS-BUILT LOCATIONS AND ELEVATIONS WERE OBTAINED BY MASER CONSULTING P.A. ON MAY 23 & JUNE 1, 2015. HORIZONTAL DATUM NAD 1983, VERTICAL DATUM NAVD88.

BASEMAP INFORMATION SUPPLIED BY C.T. MALE ASSOC.'S DRAWING TITLED "TOPOGRAPHIC SURVEY, SITES 63-65", DRAWING NUMBER 10.352, DATED JUNE 20,2010

LOT & BLOCK INFORMATION SOURCE:
1) LOT 11, BLOCK 21503 WAS PREVIOUSLY KNOWN AS LOT 4, BLOCK 2154.4 AND ALSO LOT 4, BLOCK 1497.
2) HUDSON COUNTY DEPARTMENT OF PLANNING, HUDSON COUNTY, GIS SHAPEFILE, JANUARY 1,2007
3) NEW JERSEY GEOGRAPHIC INFORMATION NETWORK, MOD IV TAX PARCEL SEARCH DATABASE.

LOCATION OF FORMER ABOVEGROUND STORAGE TANKS TAKEN FROM IT CORPORATION'S DRAWING TITLED "EXISTING SAMPLING DATA" FILE NAME: GP12-012. DRAWING NUMBER 4-1, DATED JANUARY 11, 2000.

LOCATION OF SUBSURFACE DRAINAGE STRUCTURE TAKEN FROM IT CORPORATION'S DRAWING TITLED "SITE MAP" FILE NAME: GP12-010. FIGURE NUMBER 1, DATED JUNE 17, 1999.

NATURAL GAS PIPELINE AND EXCAVATION EXTENT LOCATIONS APPROXIMATED USING GPS DATA COLLECTED BY CB&I AND SHOULD NOT BE CONSTRUCTED AS SURVEYOR QUALITY AS-BUILT OF PIPELINE OR EXCAVATION EXTENTS.

Notes:

1. IN A NOVEMBER 2012 REMEDIAL INVESTIGATION REPORT / REMEDIAL ACTION WORK PLAN / REMEDIAL ACTION REPORT, PREPARED BY EWMA, LLC FOR 14-16 BURMA ROAD, LLC FOR INVESTIGATIONS RELATED TO SRP ID #G000062419, IT WAS REPORTED THAT MONITORING WELL MW-1 COULD NOT BE LOCATED FOR SAMPLING IN JUNE 2009 AND FEBRUARY 2011.

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30 15 0 30
Scale in Feet

APTIM

Aptim Environmental & Infrastructure, LLC
200 Horizon Center
Trenton, New Jersey 08691

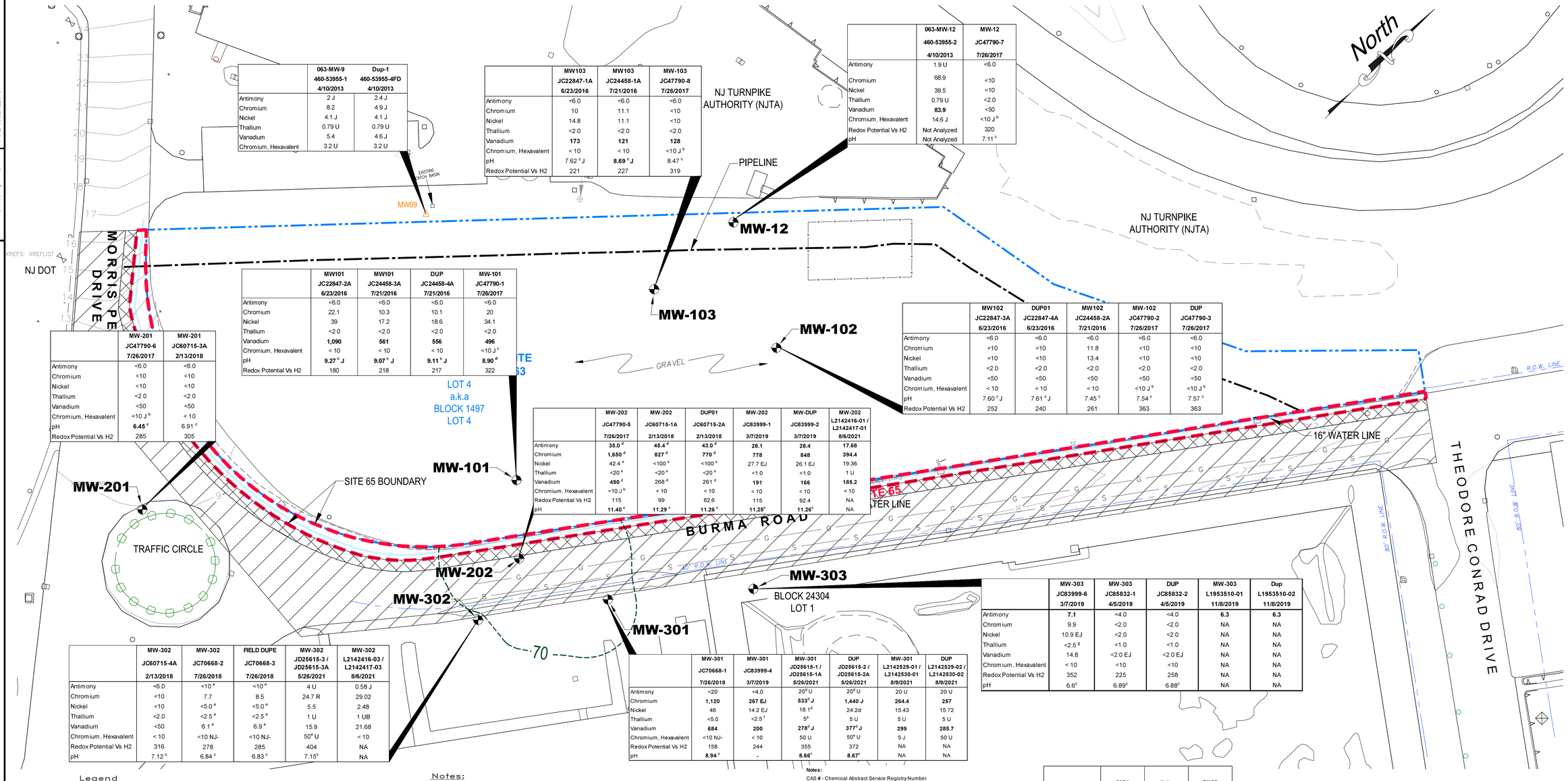
DESIGNED BY: --	PPG HUDSON COUNTY, NEW JERSEY
DRAWN BY: A.Y.	FIGURE 3 SITE 63 GROUNDWATER ELEVATION CONTOUR MAP
CHECKED BY: K. Treacy	JERSEY CITY, NEW JERSEY

APPROVED BY:	DATE:	SCALE:	DRAWING NO.	SHEET NO.
C. Leavey	12/1/21	AS SHOWN	151136-D2	-

File: K:\Project\144420-WKO\site 63 and 65\151136-02.dwg
Plot Date/Time: Dec 01, 2021 - 5:46pm
Plotted By: Alexis Yanochko

OFFICE Trenton, NJ

DRAWING NUMBER 151136-D6



	063-MW-9 460-53955-1 4/10/2013	Dup-1 460-53955-4FD 4/10/2013
Antimony	2 J	2.4 J
Chromium	8.2	4.9 J
Nickel	4.1 J	4.1 J
Thallium	0.79 U	0.79 U
Vanadium	5.4	4.6 J
Chromium, Hexavalent	3.2 U	3.2 U

	MW103 JC22847-1A 6/23/2016	MW103 JC24458-1A 7/21/2016	MW-103 JC47790-8 7/26/2017
Antimony	<6.0	<6.0	<6.0
Chromium	10	11.1	<10
Nickel	14.8	11.1	<10
Thallium	<2.0	<2.0	<2.0
Vanadium	**173**	**121**	**128**
Chromium, Hexavalent	< 10	< 10	<10 J [b]
pH	7.62 [c] J	**8.69 [c] J**	8.47 [c]
Redox Potential Vs H2	221	227	319

	063-MW-12 460-53955-2 4/10/2013	MW-12 JC47790-7 7/26/2017
Antimony	1.9 U	<6.0
Chromium	68.9	<10
Nickel	39.5	<10
Thallium	0.79 U	<2.0
Vanadium	**83.9**	<50
Chromium, Hexavalent	14.6 J	<10 J [b]
Redox Potential Vs H2	Not Analyzed	320
pH	Not Analyzed	7.11 [c]

	MW101 JC22847-2A 6/23/2016	MW101 JC24458-3A 7/21/2016	DUP JC24458-4A 7/21/2016	MW-101 JC47790-1 7/26/2017
Antimony	<6.0	<6.0	<6.0	<6.0
Chromium	22.1	10.3	10.1	20
Nickel	39	17.2	18.6	34.1
Thallium	<2.0	<2.0	<2.0	<2.0
Vanadium	**1,090**	**561**	**556**	**496**
Chromium, Hexavalent	< 10	< 10	< 10	<10 J [c]
pH	**9.27 [c] J**	**9.07 [c] J**	**9.11 [c] J**	**8.90 [d]**
Redox Potential Vs H2	180	218	217	322

	MW-201 JC47790-6 7/26/2017	MW-201 JC60715-3A 2/13/2018
Antimony	<6.0	<6.0
Chromium	<10	<10
Nickel	<10	<10
Thallium	<2.0	<2.0
Vanadium	<50	<50
Chromium, Hexavalent	<10 J [b]	< 10
pH	**6.45 [c]**	6.91 [c]
Redox Potential Vs H2	285	305

	MW-202 JC47790-5 7/26/2017	MW-202 JC60715-1A 2/13/2018	DUP01 JC60715-2A 2/13/2018	MW-202 JC83999-1 3/7/2019	MW-DUP JC83999-2 3/7/2019	MW-202 L2142416-01 / L2142417-01 8/6/2021
Antimony	**35.0 [d]**	**45.4 [d]**	**43.0 [d]**	**28.1**	**28.4**	**17.68**
Chromium	**1,650 [d]**	**827 [d]**	**770 [d]**	**778**	**848**	**394.4**
Nickel	42.4 [d]	<100 [e]	<100 [e]	27.7 EJ	26.1 EJ	19.36
Thallium	<20 [e]	<20 [e]	<20 [e]	<1.0	<1.0	1 U
Vanadium	**490 [d]**	**268 [d]**	**261 [d]**	**191**	**166**	**185.2**
Chromium, Hexavalent	<10 J [b]	< 10	< 10	< 10	< 10	< 10
Redox Potential Vs H2	115	99	82.6	115	92.4	NA
pH	**11.40 [c]**	**11.29 [c]**	**11.26 [c]**	**11.25 [c]**	**11.26 [c]**	NA

	MW102 JC22847-3A 6/23/2016	DUP01 JC22847-4A 6/23/2016	MW102 JC24458-2A 7/21/2016	MW-102 JC47790-2 7/26/2017	DUP JC47790-3 7/26/2017
Antimony	<6.0	<6.0	<6.0	<6.0	<6.0
Chromium	<10	<10	11.8	<10	<10
Nickel	<10	<10	13.4	<10	<10
Thallium	<2.0	<2.0	<2.0	<2.0	<2.0
Vanadium	<50	<50	<50	<50	<50
Chromium, Hexavalent	< 10	< 10	< 10	<10 J [b]	<10 J [b]
pH	7.60 [c] J	7.61 [c] J	7.45 [c]	7.54 [c]	7.57 [c]
Redox Potential Vs H2	252	240	261	363	363

	MW-302 JC60715-4A 2/13/2018	MW-302 JC70668-2 7/26/2018	RELD DUPE JC70668-3 7/26/2018	MW-302 JD25615-3 / JD25615-3A 5/26/2021	MW-302 L2142416-03 / L2142417-03 8/6/2021
Antimony	<6.0	<10 [e]	<10 [e]	4 U	0.58 J
Chromium	<10	7.7	8.5	24.7 R	29.02
Nickel	<10	<5.0 [e]	<5.0 [e]	5.5	2.48
Thallium	<2.0	<2.5 [e]	<2.5 [e]	1 U	1 UB
Vanadium	<50	6.1 [e]	6.9 [e]	15.9	21.68
Chromium, Hexavalent	< 10	<10 NJ-	<10 NJ-	50[e] U	< 10
Redox Potential Vs H2	316	278	285	404	NA
pH	7.12 [c]	6.84 [c]	6.83 [c]	7.15[c]	NA

	MW-301 JC70668-1 7/26/2018	MW-301 JC83999-4 3/7/2019	MW-301 JD25615-1 / JD25615-1A 5/26/2021	DUP JD25615-2 / JD25615-2A 5/26/2021	MW-301 L2142529-01 / L2142530-01 8/9/2021	DUP L2142529-02 / L2142530-02 8/9/2021
Antimony	<20	<4.0	20[e] U	20[e] U	20 U	20 U
Chromium	**1,120**	**267 EJ**	**532[e] J**	**1,440 J**	**264.4**	**257**
Nickel	46	14.2 EJ	18.1[e]	24.2d	15.43	15.72
Thallium	<5.0	<2.5 [f]	5[e]	5 U	5 U	5 U
Vanadium	**684**	**200**	**278[e] J**	**377[e] J**	**299**	**285.7**
Chromium, Hexavalent	<10 NJ-	< 10	50[e] U	50[e] U	5 J	50 U
Redox Potential Vs H2	158	244	355	372	NA	NA
pH	**8.94 [c]**	-	**8.66[c]**	**8.67[c]**	NA	NA

	MW-303 JC83999-6 3/7/2019	MW-303 JC85832-1 4/5/2019	DUP JC85832-2 4/5/2019	MW-303 L1953510-01 11/8/2019	Dup L1953510-02 11/8/2019
Antimony	**7.1**	<4.0	<4.0	**6.3**	**6.3**
Chromium	9.9	<2.0	<2.0	NA	NA
Nickel	10.9 EJ	<2.0	<2.0	NA	NA
Thallium	<2.5 [g]	<1.0	<1.0	NA	NA
Vanadium	14.8	<2.0 EJ	<2.0 EJ	NA	NA
Chromium, Hexavalent	< 10	<10	<10	NA	NA
Redox Potential Vs H2	352	225	258	NA	NA
pH	6.6[c]	6.89[c]	6.88[c]	NA	NA

Legend

- 70 — TOTAL CHROMIUM CONCENTRATION (ug/l) ISOPLETH
- MONITORING WELL (SITE 63)
- ABANDONED MONITORING WELL (SITE 63)
- SITE 65 BOUNDARY
- SITE 63 BOUNDARY (LOT 11)
- SUPPLEMENTAL REMEDIATION AREA
- RELEASED AREA
- 16" WATER LINE
- G — GAS LINE
- S — STORMWATER LINE
- PIPELINE CENTERLINE
- X — FENCE
- RETAINING WALL

Notes:

1. IN A NOVEMBER 2012 REMEDIAL INVESTIGATION REPORT / REMEDIAL ACTION WORK PLAN / REMEDIAL ACTION REPORT, PREPARED BY EWMA, LLC FOR 14–16 BURMA ROAD, LLC FOR INVESTIGATIONS RELATED TO SRP ID #G000062419, IT WAS REPORTED THAT MONITORING WELL MW–1 COULD NOT BE LOCATED FOR SAMPLING IN JUNE 2009 AND FEBRUARY 2011.

2. THE MONITORING WELLS ASSOCIATED WITH SRP ID #G000062419 WERE ABANDONED IN JANUARY 2013.

3. HORIZONTAL EXTENT OF CONTAMINATION BASED ON POST–SOIL REMEDIATION GROUNDWATER ANALYTICAL DATA. PRE–2016 GROUNDWATER ANALYTICAL DATA FROM MONITORING WELLS ASSOCIATED WITH HCC SITE 63 HAS BEEN EXCLUDED.

Sources:

FINAL AS–BUILT LOCATIONS AND ELEVATIONS WERE OBTAINED BY MASER CONSULTING P.A. ON MAY 23 & JUNE 1, 2015. HORIZONTAL DATUM NAD 1983, VERTICAL DATUM NAVD88.

BASEMAP INFORMATION SUPPLIED BY C.T. MALE ASSOC.'S DRAWING TITLED "TOPOGRAPHIC SURVEY, SITES 63–65", DRAWING NUMBER 10.352, DATED JUNE 20,2010

LOT & BLOCK INFORMATION SOURCE:
1) LOT 11, BLOCK 21503 WAS PREVIOUSLY KNOWN AS LOT 4, BLOCK 2154.4 AND ALSO LOT 4, BLOCK 1497.
2) HUDSON COUNTY DEPARTMENT OF PLANNING, HUDSON COUNTY, GIS SHAPEFILE, JANUARY 1,2007
3) NEW JERSEY GEOGRAPHIC INFORMATION NETWORK, MOD IV TAX PARCEL SEARCH DATABASE.

NATURAL GAS PIPELINE AND EXCAVATION EXTENT LOCATIONS APPROXIMATED USING GPS DATA COLLECTED BY CB&I AND SHOULD NOT BE CONSTRUCTED AS SURVEYOR QUALITY AS–BUILT OF PIPELINE OR EXCAVATION EXTENTS.

THE SOUTHERLY AND SOUTHEASTERLY BOUNDARY OF "SITE 65" IS 3' FROM THE EDGE OF THE WATER PIPE (3'–8' FROM THE CENTER).

Notes:
CAS # - Chemical Abstract Service Registry Number
GWQS - New Jersey Department of Environmental Protection Groundwater Quality Standards (N.J.A.C. 7:9C) (last amended January 16, 2018)
NS - No GWQS established for this analyte.
NA - Sample not analyzed for this parameter
su - standard unit
ug/l - micrograms per liter
mv - millivolts

[a] The GWQS for vanadium pentoxide is shown. A GWQS has not been established for total vanadium. The USEPA Integrated Risk Information System (IRIS) database, which is incorporated into N.J.A.C. 7:9D by reference, has not assigned a Carcinogenic Slope Factor or Reference Dose for vanadium and a GWQS cannot be calculated.

[b] Analysis completed out of holding time.
[c] Field analysis required. Received out of hold time and analyzed by request.
[d] Elevated sample detection limit due to difficult sample matrix.
[e] Elevated detection limit due to dilution required for high interfering element.
[f] Elevated detection limit due to dilution required for matrix interference (indicated by failing internal standard on original analysis).
[g] Elevated detection limit due to dilution required for matrix interference
Bold indicates an exceedance of the NJDEP GWQS
Analytical Data Qualifiers:
<: The analyte was not detected at the stated reporting limit.
U: The analyte was not detected at the stated reporting limit.
J: The reported result is an estimated value.
B: Analyte found in sample and associated blank
EJ: The reported value is estimated because of the presence of interference; indeterminate bias direction.
N: The matrix spike sample recovery in the associated QC sample is not within QC limits.
NJ-: The matrix spike sample recovery in the associated QC sample is below QC limits; the result is estimated and may be biased low.

	CAS#	Units	GWQS
Antimony	7440-36-0	ug/l	6
Chromium	7440-47-3	ug/l	70
Nickel	7440-02-0	ug/l	100
Thallium	7440-28-0	ug/l	2
Vanadium	7440-62-2	ug/l	60[a]
Chromium, Hexavalent	18540-29-9	ug/l	NS
pH		su	6.5-8.5
Redox Potential Vs H2		mv	NS

30 15 0 30
Scale in Feet

APTIM
Aptim Environmental & Infrastructure, LLC
200 Horizon Center
Trenton, New Jersey 08691

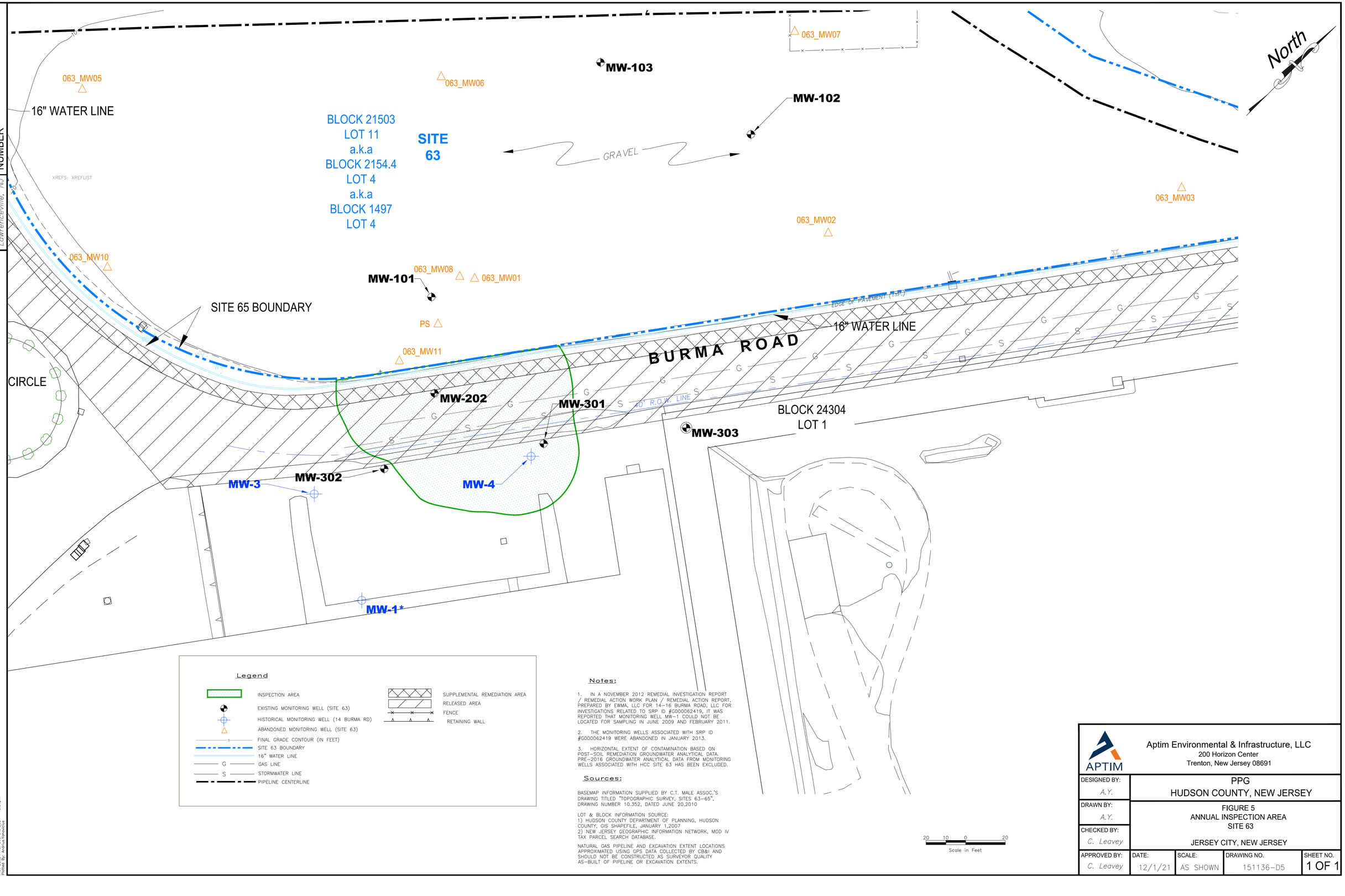
DESIGNED BY:	PPG
	HUDSON COUNTY, NEW JERSEY
DRAWN BY: A.Y.	FIGURE 4
CHECKED BY: K. Treacy	SITE 63
	GROUNDWATER ANALYTICAL SUMMARY
	JERSEY CITY, NEW JERSEY

APPROVED BY:	DATE:	SCALE:	DRAWING NO.	SHEET NO.
C. Leavey	10/25/21	AS SHOWN	151136–D6	-

File: K:\Project\145429–PPG\sites 63, and 65\151136–D6.dwg
Plot Date/Time: Dec. 01, 2021 – 5:12pm
Plotted By: Kevin.Schmidt

DRAWING NUMBER 151136-D5

OFFICE Lawrenceville, NJ



Legend

- INSPECTION AREA
- EXISTING MONITORING WELL (SITE 63)
- HISTORICAL MONITORING WELL (14 BURMA RD)
- ABANDONED MONITORING WELL (SITE 63)
- FINAL GRADE CONTOUR (IN FEET)
- SITE 63 BOUNDARY
- 16" WATER LINE
- G — GAS LINE
- S — STORMWATER LINE
- PIPELINE CENTERLINE
- SUPPLEMENTAL REMEDIATION AREA
- RELEASED AREA
- FENCE
- RETAINING WALL

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BASEMAP INFORMATION SUPPLIED BY C.T. MALE ASSOC.'S DRAWING TITLED "TOPOGRAPHIC SURVEY, SITES 63-65", DRAWING NUMBER 10.352, DATED JUNE 20,2010

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1) HUDSON COUNTY DEPARTMENT OF PLANNING, HUDSON COUNTY, GIS SHAPEFILE, JANUARY 1,2007
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20 10 0 20
Scale in Feet

Aptim Environmental & Infrastructure, LLC
200 Horizon Center
Trenton, New Jersey 08691

DESIGNED BY: A.Y.	PPG HUDSON COUNTY, NEW JERSEY			
DRAWN BY: A.Y.	FIGURE 5 ANNUAL INSPECTION AREA SITE 63 JERSEY CITY, NEW JERSEY			
CHECKED BY: C. Leavey				
APPROVED BY: C. Leavey	DATE: 12/1/21	SCALE: AS SHOWN	DRAWING NO. 151136-D5	SHEET NO. 1 OF 1

File: K:\Project\144419-RPO\sites 63_and 65\151136-D5.dwg
Plot Date/Time: Dec 01, 2021 - 5:51pm
Plotted By: Andrew Schoales