FORMER CASCADE LAUNDRY SITE

KINGS COUNTY, NEW YORK

Final Engineering Report

NYSDEC Site Number: BCP #C224194

Prepared for:

Cascade 553 LLC
264 Lynch Street, Unit 1A
Brooklyn, NY 11206

Prepared by:

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DECEMBER 3, 2018

CERTIFICATIONS

I, Ernest Hanna, certify that I am currently a registered professional engineer licensed by the State of New York, I had primary direct responsibility for implementation of the remedial program activities, and I certify that the Remedial Action Work Plan was implemented and that all construction activities were completed in substantial conformance with the Department-approved Remedial Action Work Plan.

I certify that the data submitted to the Department with this Final Engineering Report demonstrates that the remediation requirements set forth in the Remedial Action Work Plan and in all applicable statutes and regulations have been or will be achieved in accordance with the time frames, if any, established for the remedy.

I certify that all use restrictions, Institutional Controls, Engineering Controls, and/or any operation and maintenance requirements applicable to the Site are contained in an environmental easement created and recorded pursuant ECL 71-3605 and that all affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded.

I certify that a Site Management Plan has been submitted for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, including the proper maintenance of all remaining monitoring wells, and that such plan has been approved by the Department.

I certify that all documents generated in support of this report have been submitted in accordance with the DER's electronic submission protocols and have been accepted by the Department.

I certify that all data generated in support of this report have been submitted in accordance with the Department's electronic data deliverable and have been accepted by the Department.

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class “A” misdemeanor, pursuant to Section 210.45 of the Penal Law. I, Ernest Hanna, of Goldberg-Zoino Associates of New York P.C. d/b/a GZA GeoEnvironmental of New York (GZA), 104 West 29th Street, 10th Floor, New York, NY 10001, am certifying as Owner’s Designated Site Representative for the site.

Ernest R. Hanna. P.E. No. 065440	December 3, 2018	Ernest Hanna
NYS Professional Engineer #	Date	Signature

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LIST OF ACRONYMS

Acronym	Definition
BCA	Brownfield Clean-up Agreement
BCP	Brownfield Cleanup Program
bgs	Below Ground Surface
CAMP	Community Air Monitoring Plan
CHASP	Construction Health and Safety Plan
COC	Contaminant of Concern
CPP	Citizen Participation Plan
CVOC	Chlorinated VOC
DER	Division of Environmental Remediation
DUSR	Data Usability Summary Report
ECs	Engineering Controls
GC	General Contractor
gpm	Gallons Per Minute
GZA	Goldberg-Zoino Associates of New York P.C. d/b/a GZA GeoEnvironmental of New York
HASP	Health and Safety Plan
ICs	Institutional Controls
ISCO	In-Situ Chemical Oxidation
NYC DEP	New York City Department of Environmental Protection
NYCRR	New York Codes Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
ORC	Oxygen Release Compound
OSHA	United States Occupational Health and Safety Administration
PCB	Polychlorinated Biphenyl
PE	Professional Engineer
PFAS	Per- and Poly-Fluoroalkyl Substances
PID	Photo Ionization Detector
QA/QC	Quality Assurance/ Quality Control

Acronym	Definition
RAOs	Remedial Action Objectives
RAWP	Remedial Action Work Plan
RI	Remedial Investigation
SCGs	Standards, Criteria and Guidance values
SCOs	Soil Cleanup Objectives
SMP	Site Management Plan
S/MMP	Soil/ Materials Management Plan
SOPs	Site Operations Plans
SSDS	Sub-Slab Depressurization Systems
TCLP	Toxicity Characteristic Leach Procedure
T&D	Transport and Disposal
TOGS	Technical and Operational Guidance Series
TPH-GRO	Total Petroleum Hydrocarbons, Gasoline Range Organics
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds

FINAL ENGINEERING REPORT

1.0 BACKGROUND AND SITE DESCRIPTION

553 Marcy Avenue Owner LLC and Cascade 553 LLC are the Volunteers remediating the Former Cascade Laundry Site (the Site) under Brownfield Cleanup Agreement (BCA) Index #C224194) with the New York State Department of Environmental Conservation (NYSDEC). 553 Marcy Avenue Owner LLC entered into the BCA on February 13, 2015 to investigate and remediate the 2.1577-acres (94,476 square foot) Site which is located at 553 Marcy Avenue in Brooklyn, Kings County, New York. 553 Marcy Avenue Owner LLC sold the Site to Cascade 553 LLC on March 16, 2015, and the BCA was amended on March 30, 2015 to add Cascade 553 LLC as an additional Volunteer.

The contaminants of concern (COCs) in the soil on the entire property were effectively remediated to Track 1 through implementation of the excavation and in-situ chemical oxidation remedy selected in the Decision Document dated March, 2016. The excavation component of the remedy also removed all historic fill soil from the Site followed by the excavation of all native soil to approximately 12-16 ft. bgs. In the source area on (on Lots 1 and 2), excavation depths were increased and went several feet into the static water table to approximately 32-33 ft. bgs. Following the deep excavation, in-situ chemical oxidation (ISCO) with Sodium Persulfate (PersulfOX®) was implemented to treat any contaminated groundwater that remained after excavation.

Several non-COCs (4,4'-DDD, 4,4'-DDT, 4,4'-DDE, Selenium, Acetone -potential laboratory contaminant-, Chrysene and Mercury) were sporadically detected in the remaining soils above unrestricted use soil cleanup objectives (UUSCOs), primarily beneath Lot 2. However, recognizing the heterogeneity of the contaminated soils at the Site and the uncertainty of sampling and analysis of samples, under section 5.4(b)(2)(i) of NYSDEC DER-10 – "Technical Guidance for Site Investigation and Remediation" (DER-10), the NYSDEC project manager may judge that remediation is complete when, as here at this Site: there are a large number of confirmatory samples; the vast majority of

confirmation samples indicate that the soil cleanup levels for the Site have been achieved; and those that do not achieve the soil cleanup objective (SCO) exceed it only by a small amount. Such compliance averaging would result in all but 4,4'-DDD meeting UUSCOs.

The Site will be used for mixed-use commercial and residential apartment use. At full buildout, each of the Site's seven (7) lots will be covered by a multi-story building comprised of 8-11 stories each. Those buildings plus their associated sidewalks, driveways and parking will encompass the entire footprint of the Site from property boundary to property boundary.

Please refer to **Figure 1** for a Site location map. The BCA approval letter, dated February 13, 2015, and the NYSDEC's Decision Document, dated March, 2016 are presented in **Appendix A**. The Decision Document found a number of Volatile Organic Compounds (VOCs) and the metal Lead to be present at a frequency and concentration in the soil and groundwater as to be the COCs for the Site. These COCs and certain other contaminants were present at concentrations exceeding the NYSDEC's Standards, Criteria and Guidance values (SCGs) applicable to the Site's intended and reasonably anticipated use. Site-wide, in addition to the COCs in soil having been effectively remediated to the NYSDEC's Soil Cleanup Objectives (SCOs) protective of Unrestricted Use (UUSCOs), there has been a bulk reduction in contaminants related to on-site sources in groundwater, and groundwater is or will be within 5 years at asymptotic conditions. Several non-COC parameters are sporadically present in soil (primarily on Lots 1 and 2) at concentrations above their respective UUSCOs but below their respective Restricted Residential SCOs (RRSCOs).

The site is located in the County of Kings, New York. Census Tract 257, the census tract in which the BCP Site is located, is a Type A EnZone. The Poverty Rate for Census Tract 257 is 30% and its Unemployment Rate is 16.5% while the New York State Unemployment Rate is 11.5%.

The Site was originally identified as Block 1747, Lot 1, and now after subdivision, is identified as Block 1747 and Lots 1, 2, 3, 4, 54, 55 and 57, on the New York City Department of Finance Tax Map. The site is situated on an approximately

2.1577-acre area bounded by Stockton Street to the north, Myrtle Avenue to the south, a residential building and a church to the east, and Marcy Avenue to the west**.** The Site location and boundaries are depicted in **Error! Reference source not found.**. A Site survey is provided in **Appendix B** and the boundaries of the Site are fully described in the Environmental Easement provided in **Appendix C**. The Site boundary matches the tax map boundaries for Lots 1, 2, 3, 4, and 57.

Cascade 553 LLC acquired a small adjoining (non-BCP Site) lot and merged that lot into Lots 54 and 55. The non-BCP Site lot was formerly designated tax map Lot 49 and was once known as 857 Myrtle Street. The northern lot line of Lot 54 was shifted 23 feet to the north (shrinking Lot 55) and the western lot line of Lot 54 was shifted 20 feet to the east (expanding Lot 55). Second, through the merger of what was previously designated as Lot 49 into Lots 54 and 55, the eastern border of both Lots 54 and 55 expanded out beyond the BCP Site a distance of 20 feet to the east. Nevertheless, the Site itself still has the exact same boundaries, the exact same use, and the exact same acreage, both before and after these lot line adjustments.

Prior to being incorporated into Lots 54 and 55, Lot 49 measured 100 feet by 20 feet. As a result of the merger, a 20’ x 20’ portion of former Lot 49 was merged into Lot 55, although that 20’ x 20’ portion of Lot 55 is still not part of the BCP Site, and a 20’ x 80’ portion of former Lot 49 was merged into Lot 54, although that 20’ x 80’ portion of Lot 54 is still not part of the BCP Site. Accordingly, Lot 54 which once had 0.1635 acre in the Site, now has 0.2295 acre in the Site. Similarly, Lot 55 which once had 0.5366 acre in the Site, now has 0.4706 acre in the Site. Thus, the Site still comprises the same +/- 2.1577 acres.

An electronic copy of this FER with all supporting documentation is included as **Appendix Q**.

2.0 SUMMARY OF SITE REMEDY

The Site remedy, as outlined in the Remedial Action Work Plan ("RAWP"), was excavation, dewatering and in-situ chemical oxidation.

2.1 REMEDIAL ACTION OBJECTIVES

Based on the results of the Remedial Investigation, the following Remedial Action Objectives (RAOs) were identified for this site.

2.1.1 Groundwater RAOs

RAOs for Public Health Protection

- Prevent ingestion of groundwater containing contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of, volatiles from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer, to the extent practicable, to pre-disposal/pre-release conditions.
- Remove the source of ground or surface water contamination.

2.1.2 Soil RAOs

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of, or exposure to, contaminants volatilizing from contaminated soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

2.1.3 Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at the Site.

2.2 DESCRIPTION OF SELECTED REMEDY

The Site was remediated in accordance with the remedy approved by the NYSDEC in the Decision Document dated March, 2016. Note that, although the remedy selected in the Decision Document was a combination of Track 1 (UUSCOs) for Lots 3, 4, 54, 55 and 57 and Track 2 (RRSCOs) for Lots 1 and 2, UUSCOs were effectively achieved at all Lots for all COCs, due to Volunteers' decision to over-excavate Lots 1 and 2.

In the Lots 1 and 2 source area, excavation depths were increased and went several feet into the static water table to approximately 32-33 ft. bgs. Following the deep excavation, in-situ chemical oxidation (ISCO) with PersulfOX® was implemented to treat any contaminated groundwater that remained after excavation.

The factors considered during the selection of the remedy are those listed in 6 New York Codes Rules and Regulations (NYCRR) 375-1.8. The following are the components of the selected remedy set forth in the Decision Document:

2.2.1 Remedial Design

A remedial design program was implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques was implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;

- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2.2.2 Excavation

Excavation and off-site disposal of contaminant source areas, including:

- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- soil exceeding the USEPA and 6 NYCRR Part 371 hazardous criteria for lead;
- removal of any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination;
- non-aqueous phase liquids; and
- soils which exceed the protection of groundwater soil cleanup objectives (PGWSCOs), as defined by 6 NYCRR Part 375-6.8, for those contaminants found in site groundwater above standards.

The Site was divided into two areas for soil excavation. The cleanup goal for the northwest corner of the site (Lots 1 and 2) was Track 2, while the cleanup goal for the remainder of the site (Lots 3, 4, 54, 55 and 57) was Track 1. At a minimum, the site had to meet the requirements of a Track 4 cleanup.

- All soil in the Track 1 area of the Site which exceeded the UUSCOs, as defined by 6 NYCRR Part 375-6.8, was required to be excavated and transported off-site for disposal.

• All soil in the Track 2 area of the Site which exceeded the RRSCOs, as defined by 6 NYCRR Part 375-6.8, in the upper 15 feet had to be excavated and transported off-site for disposal. All soil in the Track 2 area which exceeded PGWSCOs for applicable contaminants, as defined by 6 NYCRR Part 375-6.8, had to be excavated and transported off-site for disposal.

Approximately 23,000 cubic yards of contaminated soil was anticipated to be removed from the Site. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) was required to be brought in to replace the excavated soil and establish the designed grades at the Site.

Once excavation was complete, soil sampling was required to be conducted to determine if the on-site soils could be recontaminated by potential leaks from an underground storage tank located adjacent to Lot 2 of the Site. If recontamination was possible, measures would have to be implemented to protect the Site from this potential off-site source.

2.2.3 Groundwater Dewatering and Treatment

Following excavation of the petroleum source areas, remaining free-phase petroleum (LNAPL) and contaminated groundwater had to be pumped out of the excavation and transported off-site for disposal.

2.2.4 In-Situ Chemical Oxidation

In-situ chemical oxidation (ISCO) was required to be implemented to treat petroleum-contaminated groundwater that remained after excavation, and removal of LNAPL and contaminated groundwater. A chemical oxidant was required to be applied into the bottom of the excavation to destroy the contaminants which were located in the northwest section of the Site. The treatment area was estimated at 2,200 square feet.

2.2.5 Vapor Intrusion Assessment

A post-remedial soil vapor intrusion evaluation was required to be completed prior to occupying any buildings developed on the Site. The assessment had to include a

provision for implementing actions recommended to address exposures related to soil vapor intrusion, if identified. If a sub-grade parking garage was later constructed beneath the entire on-site future building(s), then the soil vapor intrusion pathway would be adequately addressed by the New York City Mechanical Code, which requires proper ventilation. If the soil vapor intrusion evaluation has not been completed at the time the Final Engineering Report is submitted, an environmental easement and Site Management plan would be required to address the potential for soil vapor intrusion.

2.2.6 Contingent Remedial Elements

The intent of the remedy was to achieve Track 1 unrestricted use for a portion of the site (i.e. Lots 3, 4, 54, 55, and 57); therefore, no environmental easement or site management plan was anticipated for this portion of the site. Track 1 was achieved for Lots 3, 4, 54, 55 and 57. Nevertheless, in the event that Track 1 unrestricted use was not achieved for Lots 3, 4, 54, 55 and 57, and for Lots 1 and 2 where a Track 2 restricted residential cleanup was anticipated to be achieved, the Decision Document required the contingent remedial elements stated below.

2.2.6.1 Cover System

A site cover was required to allow for restricted residential use of Lots 1 and 2. The cover would have to consist either of the structures such as buildings, pavement, and/or sidewalks comprising the site development, or a soil cover in areas where the upper two feet of exposed surface soil met the applicable RRSCOs or better. Where soil cover was put in place, it was required to be a minimum of two feet of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted residential use. The soil cover also would have had to been placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the Site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

2.2.6.2 Institutional Control

Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

- Require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- Allow the use and development of the controlled property for restricted residential use, as defined by Part 375-1.8(g), although land use is subject to local zoning laws; and
- Require compliance with the Department-approved Site Management Plan.

2.2.6.3 Site Management Plan

A Site Management Plan is required, which includes the following:

a. An Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:
   - Institutional Controls: The Environmental Easement discussed in Section 2.2.6.2 above.
   - Engineering Controls: The site cover contingency discussed in Section 2.2.2.5 above.

   This plan includes, but may not be limited to:
   - An Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
   - Descriptions of the provisions of the environmental easement including any land use and/or groundwater restrictions;
   - A provision for evaluation of the potential for soil vapor intrusion in future buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;

- Provisions for the management and inspection of the identified engineering controls;
- Maintaining site access controls and Department notification; and
- The steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. A Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
   - Monitoring of groundwater to assess the performance and effectiveness of the remedy;
   - A schedule of monitoring and frequency of submittals to the Department;
   - Monitoring for vapor intrusion for any future buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

3.0 INTERIM REMEDIAL MEASURES, OPERABLE UNITS AND REMEDIAL CONTRACTS

Lead was identified in a soil sample collected in Grid K (3ft-5ft bgs), at a concentration of 3,770 mg/kg during the Remedial Investigation (RI). Based on that data, AMC Engineering PLLC / Environmental Business Consultants (EBC) identified this as a hazardous lead area. An Interim Remedial Measure was completed in January 2016 which included excavating soil located in Grid K to a depth of seven feet bgs. Approximately 80 cubic yards of soil were excavated from a 10-foot by 10-foot area. On March 8, 2016, EBC remobilized to the Site to characterize the soil for waste disposal. Soil samples were collected at four locations within the assumed hazardous lead excavation footprint area and analyzed by Toxicity Characteristic Leaching Procedure (TCLP) analysis. No soils exhibited TCLP lead above the toxicity characteristic level of 5.0 mg/L. Therefore, no further excavation of the lead contaminated soil at the Site was required as part of the Interim Remedial Measure. Details were provided in **Appendix H.**

4.0 DESCRIPTION OF REMEDIAL ACTIONS PERFORMED

Remedial activities completed at the Site were conducted in accordance with the NYSDEC-approved RAWP for the Former Cascade Laundry Site (March 2016). The following sections present information regarding the implementation of the remedial activities. Any deviations from the RAWP are noted below.

4.1 GOVERNING DOCUMENTS

This subsection provides information relative to the planning and work plans for remedy.

4.1.1 Site-Specific Construction Health & Safety Plan

Remedial work performed under this Remedial Action was in compliance with governmental requirements, including Site and worker safety requirements mandated by Federal Occupational Health and Safety Administration (OSHA).

The Health and Safety Plan (HASP) was complied with during remedial and invasive work performed at the Site. The HASP did not include general or site-specific construction related or general industry safety information, which was the responsibility of YNH Construction Inc., the General Contractor (GC)

The construction Site Safety Coordinator was a qualified representative of the Dunn Co Safety. Dunn Co Safety developed and implemented its own site-specific Construction Health & Safety Plan (CHASP) as required by OSHA. During remedial activities, a representative of GZA was present for additional health and safety observation, and as required pursuant to the BCA.

4.1.2 Quality Assurance/Quality Control

Quality assurance/quality control (QA/QC) activities were included as Section 4.1 of the RAWP approved by the NYSDEC, including quality assurance planning activities such as specific policies, objectives, organization, functional activities and other quality assurance/quality control activities designed to achieve the project data quality objectives and the field and lab methodologies used to monitor construction quality and confirm that

remedial construction was in conformance with the remediation objectives and specifications.

As part of the post-excavation sampling activities, GZA collected QA/QC samples in order to: (1) check sample bottle preparation; (2) evaluate contamination introduced during transport; (3) evaluate the effectiveness of field decontamination procedures; and (4) evaluate the reproducibility and accuracy of the laboratory analytical procedures. GZA collected one co-located blind duplicate sample and one VOCs trip blank at a rate of 10 percent (%) for a total of five duplicates and five trip blanks.

4.1.3 Soil/Materials Management Plan

A Soil/Materials Management Plan (S/MMP) was prepared and implemented for excavation, handling, storage, transport and disposal of all soils/materials that were disturbed/excavated at the Site. The S/MMP included all of the controls that were applied to these efforts to assure effective, nuisance-free performance in compliance with all applicable Federal, State and local laws and regulations. The S/MMP was included as Section 5.5 of the RAWP approved by the NYSDEC

4.1.4 Storm-Water Pollution Prevention Plan

The erosion and sediment controls for all remedial construction were performed in conformance with requirements presented in the New York State Guidelines for Urban Erosion and Sediment Control. A site-specific Storm Water Pollution Prevention Plan (SWPPP) was not required for this project.

4.1.5 Community Air Monitoring Plan

Real-time air monitoring for VOCs and particulate levels at the perimeter of the work area was performed as part of a Community Air Monitoring Plan (CAMP). Continuous air monitoring was performed during ground intrusive activities and during the handling of contaminated or potentially contaminated media. Ground intrusive activities included, but are not limited to, soil/waste excavation and handling, drilled pile installation, test pit excavation or trenching and load out of regulated and non-regulated soils.

Periodic monitoring for VOCs was also performed during non-intrusive activities, such as the collection of soil samples. Periodic monitoring during sample collection, for instance, consisted of taking a reading upon arrival at a sample location, monitoring while overturning soil or excavating test pits, and taking a reading prior to leaving a sample location.

4.1.6 Contractors Site Operations Plans

The Remediation Engineer reviewed the all site-specific plans and submittals for this remedial project (i.e. those listed above plus contractor and subcontractor submittals) and confirmed that they were in compliance with the RAWP. All remedial documents were submitted to NYSDEC and New York State Department of Health (NYSDOH) in a timely manner and prior to the start of work.

4.1.7 Community Participation Plan

Under the Citizen Participation Plan (CPP), project documents and work plans were made available to the public in a timely manner. Cascade 553 LLC has, and will continue to, maintain a repository for project documents and provide public notice at specified times throughout the remainder of the remedial program.

Public notice announcing the approval of the RAWP and the start of remediation was performed on April 2016. That public notice was in the form of a Fact Sheet that was sent to the parties listed on the Site Contact List.

The remaining element of the CPP includes announcing the completion of remediation and construction, providing a list of the Institutional and Engineering Controls implemented for the Site, and announcing the issuance of the Certificate of Completion. Public notice will be in the form of a Fact Sheet sent to the parties listed on the Site Contact List.

4.2 REMEDIAL PROGRAM ELEMENTS

This subsection provides information relative to the execution of the work plans for remedial action.

4.2.1 Contractors and Consultants

The contractors who directly participated in the completion of the remedial objectives include:

- YNH Construction Inc – GC
- Capital Concrete – Foundation Contractor
- Dunn Co Safety – The construction Site Safety:
- Impact Environmental Closures, Inc. – Soil T&D Contractor
- Blanco Trucking Inc. – Concrete Disposal Contractor
- Bentzys Construction Inc – Building Waterproofing Contractor
- American Environmental Assessment Corp – Dewatering Contractor
- M.R. Electrical – Electrical Contractor
- Eastern Environmental Solutions, Inc. – UST Removal Contractor

The engineer of record for the oversight and conformance with the remedial objectives was Ernest R. Hanna, P.E. of GZA.

4.2.2 Site Preparation

The demolition permit was obtained at the end of November 2015, and demolition commenced the following week on December 1, 2015. Demolition was completed in the first week of January 2016. The contractor mobilized to the Site on April 18, 2016 and installed a perimeter construction fence.

A pre-construction meeting was held on April 29, 2016 with NYSDEC, a representative of Cascade 553 LLC, GZA and the contractor.

As part of the CPP, A NYSDEC-approved project sign was erected at the project entrance and has remained in place during all phases of the Remedial Action.

4.2.3 Monitoring Well Decommissioning and Re-Installation

Per the RAWP, a total of 13 monitoring wells (14 MW-1 through 14 MW-13) that had been installed during the different RI program were decommissioned. Of the 13 decommissioned wells, Four (4) wells were re-installed per the RAWP. Well installation details are provided in **Appendix N**. A figure showing the re-installed well locations is included as **Figure 5B**.

4.2.4 General Site Controls

The Site was secured with a temporary 12-foot plywood construction fence with a 20-foot gate opening for vehicular traffic. Site records were kept at the on-Site office trailer and daily summary reports sent to the NYSDEC.

Equipment decontamination was achieved by scraping, brushing, and washing at the specified decontamination area located at the entrance of the Site. An outbound-truck inspection station was set up close to the Site exit. Before exiting the Site, trucks were stopped at the truck inspection station and examined for evidence of contaminated soil on the undercarriage, body, and wheels. Brooms, shovels, and potable water were utilized for the removal of soil from vehicles and equipment, as necessary.

Soils removed during UST excavation (see Section 4.3.2 below) were stockpiled on poly sheeting and segregated, as were soils based on previous environmental data. Grossly contaminated soil was further segregated and stockpiled on poly sheeting and covered with poly sheeting in a designated area to minimize any potential cross-contamination of materials.

4.2.5 Nuisance Controls

Measures to limit off-Site odor and dust nuisances were taken. Dust was managed by application of physical covers, by limiting the drop height of soil material, by partial cleaning of equipment leaving the Site, and by water sprays. Odors were controlled by limiting the area of open excavations. No nuisance odors were observed outside of the Site. Noise was minimized to the extent practicable. Complaints were not received.

Traffic related to on-going remedial activity required the staging of 10-wheel dump trucks on Myrtle Avenue on a daily basis during soil excavation activity. Trucks transporting materials off-Site and onto public roadways were inspected prior to departure. Drivers of trucks leaving the Site with soil/fill were instructed to proceed without stopping in the vicinity of the Site to prevent neighborhood impacts. The soil disposal transport route were as follows:

- ENTERING SITE - from the Brooklyn Queens Expressway heading south; take the Kent Avenue Exit and turn left heading south on Kent Avenue to Myrtle Avenue. Turn left, heading east on Myrtle Avenue to the Site entrance on the left (0.58 miles, 8 blocks).
- EXITING SITE – Turn right onto Myrtle Avenue heading west to Bedford Avenue. Make a right on Bedford Avenue heading north to Williamsburg Street East. Make a right on Williamsburg Street East heading north and continue to the on-ramp (bearing left) for the Brooklyn-Queens Expressway.

The Streets and sidewalks affected by the trucking operation were kept clean of debris and soil. The streets were routinely rinsed with high pressure water while trucking operations were conducted.

4.2.6 CAMP Results

Air monitoring was performed by GZA daily during excavation or other ground intrusive activities on-site. Two stations were set up within the Site enclosure. Action levels were not exceeded.

Copies of all field data sheets relating to the CAMP are provided in electronic format in **Appendix D**.

4.2.7 Reporting

Daily reports providing a general summary of activities for each day of active remedial work were emailed to the NYSDEC Project Manager by the end of the following day. Those reports included project number, statement of the activities, an update of progress made, and locations of work performed; quantities of material imported and exported from the Site; status of on-site soil/fill stockpiles; emergencies related to the Site, if any; a summary of CAMP data; and, photographs of notable Site conditions and activities.

All daily and monthly reports are included in electronic format in **Appendix E**.

The digital photo log required by the RAWP is included in electronic format in **Appendix F.**

4.3 CONTAMINATED MATERIALS REMOVAL

The following contaminants were identified as the COCs for the Site in the Decision Document:

Tetrachloroethene (PCE)	Xylene (mixed)
1,3,5-Trimethylbenzene	Methylene Chloride
Lead	Naphthalene
Chrysene	Trichloroethene (TCE)
1,2,4-Trimethylbenzene	Benzene
Ethylbenzene	Toluene

The soil cleanup objectives selected in the Decision Document for the Site were those established for the protection of public health for unrestricted use (UUSCOs) for Lots 3, 4, 54, 55, and 57, i.e., Track 1, and for Lots 1 and 2 were those for the protection of public health for restricted residential use (RRSCOs) and for the protection of groundwater (PGWSCOs) for those contaminants detected in groundwater above SCGs, i.e., Track 2. See **Appendix A**. The UUSCOs, RRSCOs and PGWSCOs for the COCs are provided in Table 1

The location and extent of all material removal is shown in **Figure 3** – Remediation Map. A table and figure summarizing all end-point sampling is included in **Table 2** and **Figure 4B**, respectively, and the minor sporadic exceedances of SCOs remaining at depth are highlighted.

The following is a chronology of remediation:

- On April 16, 2016, the Contractor and GZA mobilized to the Site to begin remedial construction and Site development activities per the Decision Document as set forth in the RAWP.

Excavation of Lots 2, 3, 4, 54 and 55

- Initial activities included set up of CAMP, waste characterization sampling, petroleum contamination delineation, and installation of support of excavation (SOE) at buildings A, B, C, F, and G locations. SOE at buildings D and E (lots 1 and 57) had to await Metropolitan Transit Authority (MTA) approval.
- On May 24, 2016, excavation, transportation and disposal of contaminant containing soils began on-Site. Excavation continued through March 2017, and building foundations equipped with the vapor barrier and sub-slab depressurization system piping required by the Decision Document were completed at buildings A, B and C. As of March 9, 2017, the majority of the Site had been excavated to final grade except at the Building D and Building E locations, where excavation activities were still pending MTA approval of the SOE along Marcy Avenue.

Excavation of Lots 1 and 57

- Final approval of the SOE was received from MTA in September 2017 and excavation and SOE installation activities resumed at the Site. By May 2018, excavation of petroleum contaminated soils beneath the water table at the building D (lot 1) location could begin using trench boxes. Separate-phase product was skimmed from the water table and placed in a frac tank. Sodium persulfate was added into the exposed water table prior to backfilling. On May 10, 2018, a decision was made to wait until July 6, 2018 (once SOE was completed for building D on Lot 1) to complete the deep excavation below the water table, continue to skim the separate phase product and apply additional sodium persulfate. From July 6 to August 1, 2018 petroleum excavation below the water table, skimming of separate phase product and sodium persulfate application occurred. On August 17, 2018 the last soils (aside from the clean imported soils used for the construction ramp) were removed from the Site.

Soil Vapor Intrusion Evaluation Lots 2, 3 and 4

- During the cessation of excavation activities between March 2017 and January 2018 construction of buildings A, B and C continued. By January 2018, interior construction on buildings A, B and C had completed to a point where soil vapor intrusion sampling could be conducted. On January 27, 2018, GZA mobilized to the site to conduct sub-slab soil vapor, soil gas and indoor air sampling at buildings A, B and C.
- To date, piping for the SSDS and the vapor barrier has been installed under Buildings D, E and F, which are under construction. Only Building G, which is not yet under construction, requires installation of the SSDS piping and vapor barrier.

Groundwater sampling

On July 23, August 13, and October 10, 2018, GZA installed post-excavation monitoring wells MW-1, 2, 3, and 4 at the Site per the RAWP in the northwest corner of the Site. On August 22, 2018, October 4-15, 2018, and November 1, 2018, GZA collected three rounds of groundwater samples from these four wells.

4.3.1 Soil Removal

Petroleum impacted soil excavation work began on-site on May 23, 2016. By August 14, 2018, the last soils (aside from the clean imported soils comprising the construction ramp) were removed from the Site and disposed of at approved facilities. A total of 89,036 tons of soil were removed from the Site.

The remediation of the Site consisted of excavation and off-site disposal of all subsurface materials within the boundary of the Site to a depth of approximately 15 ft. bgs with over-excavation occurring in limited areas, i.e., excavation depths were increased to approximate 32 ft. bgs in the 20,000 UST and 550 UST source area on Lots 1 and 2.

Specifically, excavation work included the following: excavation of petroleum contaminated soil within the source area on Lots 1 and 2 to a depth of 30-32 ft. bgs, including a Chlorinated VOC (CVOC) hotspot; and excavation of historic fill soil from the remainder of the Site to depths of 8 ft. bgs, followed by excavation of native soil from 8 ft. bgs to approximately 15-16 ft. bgs. Soil excavation was performed using conventional equipment such as track-mounted excavators, backhoes and loaders. All excavation work was performed in accordance with the site-specific CHASP and CAMP.

4.3.1.1 Excavation of Petroleum Contaminated Soil (Northwest Area)

Petroleum impacted soil was documented, during the RI and an additional investigation GZA performed in 2016, to be in close proximity to three USTs located in the northwest corner of the Site (primarily Lot 1 but also Lot 2). Details for the petroleum delineation report are provided in **Appendix K**. Petroleum impacted soils extended to the static water table and were observed at depths of approximately 25-30 ft. bgs. The lateral extent of petroleum impacted soils is shown on **Figure 4A**. The contaminated soil was excavated several feet into the static water table to approximately 32-33 ft. bgs and PersulfOX® was applied at the groundwater interface prior to backfilling. Immediately after that excavation into the water table and application of PersulfOX®, crushed stone was placed to bring the grade above the water table and then a mud mat was poured.

Petroleum contaminated soil were segregated from non-contaminated native soils and disposed of off-Site at a permitted disposal facility operated by Phase III Environmental, LLC in Palmerton, PA. Details of the waste characterization documentation were provided in **Appendix G.**

4.3.1.2 Excavation of CVOC Hazardous Soil (Northwest Area)

CVOC impacted soil was present in shallow soils in the vicinity of a 550 gallon UST also located in the northwest corner of the Site (Lot 1). Data from the RI indicated that the vertical extent of CVOCs, however, was limited to 16 ft. bgs such that the CVOCs associated with the former 550 gallon UST appeared not to have reached groundwater based on no detections in well 14MW-8 immediately downgradient of the USTs and could be removed in their entirety. The RI concluded that

> "CVOC contamination is also present in shallow soil in the vicinity of a 550 gallon underground tank present in this same general area. … CVOC impacts were not reported in groundwater within or downgradient of the CVOC source area indicating that PCE contamination has neither migrated as a solvent or in dissolved form to the groundwater."

The CVOC containing soil was excavated in its entirety. Based on waste characterization sampling, the CVOC results were within the range accepted by the permitted disposal facility operated by Phase III Environmental, LLC in Palmerton, PA. These CVOC impacted soil were removed along with petroleum contaminated soil from Site. No CVOCs were present in post-excavation soil samples.

4.3.1.3 Excavation of Historic Fill Soil

Historic fill material was identified across the entire Site to depths of 8 ft. bgs beneath the slab-on-grade areas of the Site and to 2 ft. bgs below the basement slab level in the areas with basements. The fill material sporadically contained COCs and several other parameters, such as semi-volatile organic compounds (SVOCs) and pesticides, above UUSCOs. The historic fill was excavated to native material (i.e., to approximately 5-8 ft. bgs), and segregated from non-contaminated native soils and disposed of off-Site at the permitted disposal facilities operated by Phase III Environmental, LLC in Palmerton, PA and the Former Griffin Pipe Products Site in Florence, NJ.

4.3.1.4 Excavation of Native Soils

Native soils were present directly below the fill materials and were excavated an additional 7-10 ft bgs, i.e., to approximately 15-16 ft. bgs. Since this excavation followed the removal of the COC-containing historic fill, native soils were not contaminated. The native soils were excavated to a final grade of approximately 15-16 ft. bgs, which is above the static groundwater level of 28-32 ft. bgs. A portion of the excavated native soils was approved for reuse by NYSDEC to back fill some of the areas that were over-excavated. The documentation of NYSDEC's approval of those soils for reuse is found in Appendix J. Section 4.3.1.6 below details the depths and locations of on-site reuse approved by NYSDEC.

The remainder of the excavated native soils were disposed of off-site at the following permitted disposal facilities: Impact Reuse and Recovery Center in Lyndhurst, NJ and Former Griffin Pipe Products Site in Florence, NJ.

Community air monitoring was performed throughout the excavation process and during the disturbance of any soil.

4.3.1.5 Disposal Details

Excavated materials were handled, transported, and disposed of in accordance with applicable 6 NYCRR Part 360 / 364 / 372 regulations, YNH Construction Inc.'s Excavated Material Disposal Plan, and other local, state, and federal regulations. YNH Construction Inc. applied for material's acceptance for disposal of the following targeted materials: land-clearing debris, concrete, bricks, asphalt, metallic objects, general refuse, petroleum impacted soil, and non-TSCA fill (clean and regulated). Waste streams were characterized, per the respective disposal facility requirements, by laboratory analysis prior to the start of Site work. Excavation and disposal of petroleum-impacted soils was conducted concurrently with other excavation activities.

The disposal facilities received copies of the waste-characterization sample analysis for their review. The disposal facilities then issued a material's acceptance approval letter. The following is a list of the disposal facilities and the material they were pre-approved to receive:

- Impact Reuse and Recovery Center (Lyndhurst NJ) for clean historic fill material.
- Former Griffin Pipe Products Site (Florence, NJ) for construction site fill.
- Phase III Environmental, LLC (Palmerton, PA) for CVOCs petroleum impacted material, and regulated historic fill.
- River Terminal Development Project- South Kearny, NJ clean historic fill material.
- Bayshore Soil Management, LLC- Keasbey, NJ for concrete, brick, and asphalt.

Waste characterization sample results are summarized in **Tables 5A and 5B.** Contour maps of final cut and fill thicknesses for remedial activities at the Site are included in **Figure 3**.

Waste manifests are included in **Appendix G**. **Table 6** summarizes each generated waste and their quantities, transporters, and final destinations.

Table 6 – Waste Disposal Summary

Facility # Name/ Location Type of Waste Solid or Liquid	River Terminal		Griffin Pipeline		IRCC		Palmerton – Phase III		Bayshore	
(Trucks, Cu.Yds. Or Gallons)	Trucks	Appx/Cu. Yds.	Trucks	Appx/Cu. Yds.	Trucks	Appx/Cu. Yds.	Trucks	Appx/Cu. Yds.	Trucks	Appx/Cu. Yds.
Total	364	7,280	529	10,580	119	2,380	785	15,700	39	780

Table 6 above shows the total quantities of each category of material removed from the Site and the disposal locations. A summary of the samples collected to characterize the waste, and associated analytical results are summarized on Table 5.

Letters from Applicants to disposal facility owners and acceptance letters from disposal facility owners are attached in **Appendix G**.

Manifests and bills of lading are included in electronic format in **Appendix G**.

4.3.1.6 On-Site Reuse

On-site reuse fill plan was approved by NYSDEC on August 9, 2016. Details are provided in **Appendix J**. To date, minimal amount of soils have been used to backfill the areas over-excavated. In addition, some of the soils approved for reuse were mixed with clean imported soil and used as the construction ramp on the Site.

4.3.2 Underground Storage Tank Removal

During the period from April 2016 through October 2016, seven (7) petroleum USTs were unearthed, cleaned and removed from the Site: one 20,000 gallon UST from the northwest corner; five 275 gallon oil USTs and one 1,000 gallon UST on the east area

of the Site. This occurred during the initial stages of the brownfield redevelopment project. These USTs were cleaned by Eastern Environmental, the UST contractor, and an affidavit was filed with the Department. One former 550 gallon potentially CVOC-containing UST was also unearthed, cleaned and removed from the northwest corner by Eastern Environmental.

4.3.3 Dewatering and In-situ chemical oxidation

Following deep excavation of the petroleum-containing soil in the northwestern corner of the Site (Lots 1 and 2), remaining free-phase petroleum (LNAPL) was skimmed from the excavation and transported off-Site for disposal. In-situ chemical oxidation (ISCO) with PersulfOX® was implemented to treat any VOC-contaminated groundwater that remained after excavation and product skimming.

PersulfOX® was applied at the groundwater interface prior to backfilling to address potential residual petroleum contaminated groundwater in Lots 1 and 2 (Building C and future Building D footprint). PersulfOX® was placed in the base of the excavation in areas where petroleum release was identified during the remedial excavation and in accordance with the NYSDEC-approved Petroleum Delineation Report, dated August 12, 2016. **Figure 3** shows the treatment area.

PersulfOX® was placed at a rate and in a manner consistent with manufacturer recommendations. PersulfOX® was placed into the exposed water table as well as raked into the exposed soils at the water table with excavation equipment. Following placement of PersulfOX® into the soils, the excavation was backfilled with soil from on-Site sources identified in the Fill Reuse Plan (for Building C footprint) and the clean fill material from off site (for future Building D area). A layer of gravel was then placed over the treated soils. A working mud mat slab was poured over the gravel. Once the working mat slab cured, gravel containing the sub-slab depressurization piping, a vapor barrier and the structural foundation slab for Building D were installed.

Specifically, the PersulfOX® application was divided into two phases. Soil excavation occurred at Lot 2 (in the Building C footprint) and the PersulfOX® was applied in December 2016. Since the excavation was localized in a small 10 ft. x 50 ft.

area and the depth to water is deep, significant dewatering did not occur during this work. Saturated soils were observed at depths of approximately 29 ft. bgs and a minimal influx of water was observed. Clean native material from another location on the Site was then approved by NYSDEC for reuse to backfill the area to above the water table or approximately 25 ft. bgs.

During May 2018, petroleum contaminated soil beneath Lot 1 was excavated to the water table and then beneath the water table by using trench boxes. Separate-phase product was skimmed from the water table and placed in a frac tank. PersulfOX® was added into the exposed water table prior to backfilling. From July 6, 2018 to August 1, 2018, further petroleum excavation below the water table in Lot 1 was undertaken, including skimming of separate phase product and further PersulfOX® application occurred.

Details of the PersulfOX® installation which includes the date, surface conditions (water present), skimming operations (if any), approximate area and amount PersulfOX® installed are shown in **Table 7**. A figure showing the petroleum extent and the approximate area of installation is shown as **Figure 3**.

Table 7 Persulfate Installation On-Site

DATE	Cell	Cell Quadrant	Groundwater Infiltration	Approximate depth of Saturated Soil	Recoverable/ Gallons Recovered	LNAPL/ Sheen Present	Application Area (SF)	Application Depth	Application Amount (lbs.)	Notes
12/14/2016	Q/R	East	No	29'-30 ' bgs	No/0	N	530	31' bgs	400	
12/22/2016	Q/R	East	Minimal	29'-30' bgs	No/0	N	810	31' bgs	605	
5/3/2018	S	West	Yes	31' - 33' bgs	2,000	Yes	100	33' bgs*	100	EP-92 location
5/4/2018	S	West	Yes	31-33' bgs	2,000	Yes	100	33'bgs	100	North of EP-92
5/10/2018	S	West	Yes	31'-33' bgs	1,000	Yes	1,200	'33' bgs	1,200	Elevator pit & 2 trench boxes
6/1/2018	U	West	Yes	31-33' bgs	200	Yes	400	33' bgs	400	NW corner of Site
6/14/2018	T	West	Yes	31-33' bgs	200	Yes	400	33' bgs	400	North sheetpile
7/6/2018	S	West	No	31-33' bgs	No	No	300	31' bgs	300	Northern section of Grid S
7/10/2018	S/T	West	Yes	31-32' bgs	50	Yes	300	32' bgs	300	West of building C
7/20/2018	U/V/T	West	Yes	31-33' bgs	100	Yes	1,200	33'bgs	1,200	Western section of Site
7/23/2018	T	West	Yes	31-33' bgs	150	Yes	400	33' bgs	400	

8/1/2018	S	West	Yes	31-33' bgs	150	Yes	400	33' bgs	400	

Notes: *persulfate was applied as deep as 38' to localized elevator pit areas.

4.3.4 Fluids Management

From April 26,2018 to August 3, 2018, American Environmental Assessment removed and disposed of a total of 31,119 gallons of petroleum–containing water generated from the Site.

4.4 REMEDIAL PERFORMANCE/DOCUMENTATION SAMPLING

Removal actions were performed in conjunction with remedial end-point sampling. End-point sampling frequency was in accordance with the NYSDEC-approved RAWP and IRM Work Plan and consistent with DER-10 guidance. Endpoint samples were collected when the vertical limits of the excavation had been achieved.

Four (4) post-excavation groundwater monitoring wells were used to evaluate the effectiveness of the excavation/ISCO remedy and demonstrate the bulk reduction of dissolved petroleum-related contaminants in groundwater. Post-excavation MW-3 was installed in the center of Lot 1, while the three post-excavation off-site, downgradient wells (MW-1, MW-2 and MW-4) are located on the surrounding sidewalks. Additional post-remedy monitoring is presented in the SMP (**Appendix I**).

4.4.1 Soil Remedial Performance/Documentation Sampling

The CVOCs and petroleum contaminated soil within the Site boundary was removed. Confirmation soil samples were collected at the final excavation grade at one sample per 900 ft^2 and analyzed in accordance with DER-10. Three documentation samples were collected from the sidewall of Lot 2 proximate to an off-site UST to demonstrate that the minimal contamination associated with that tank did not warrant the implementation of protective measures post-excavation. Specifically, end-point soil samples and post-excavation groundwater samples were sent to Alpha Analytical, a New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP)-certified laboratory in accordance with EPA SW-846 methods, under proper chain-of-custody protocols and documentation. The QA/QC procedures required

by the SW-846 methods were followed, including instrument calibration, standard compound spikes, surrogate compound spikes, and analysis of quality control samples. The laboratory provided pre-cleaned sample bottles.

The analytical laboratory analyzed the confirmation samples for Pesticides by Method SW-846 8081B, PCB by Method 8082A, VOCs by Method 8260, SVOCs by Method 8270, and/or metals by Method 6010. Endpoint sampling results were compared to the respective UUSCOs, RRSCOs and PGWSCOs.

Post-excavation samples were collected in accordance with the RAWP throughout the course of construction. In certain instances, over-excavation was necessary to achieve the desired UUSCOs for all COCs. In these cases, soils were over-excavated to the next clean end point sample and backfilled with soils authorized for reuse or with gravel meeting the requirements of 6 NYCRR 375-6.7(d).

The Site-wide excavation achieved the Track 1 UUSCOs for all COCs and all other non-COC parameters at four (4) of the Site's seven (7) lots (Lots 3, 4, 55, and 57). Track 1 was also effectively achieved at Lot 54 because all post excavation samples met UUSCOs for the COCs, and with respect to the detections of the non-COC parameters, per NYSDEC DER-10, 5.4(b)(2)(i), remediation may be judged to be complete when: there is a large number of confirmatory samples; the vast majority of confirmation samples indicate that the soil cleanup levels for the site have been achieved; and those that do not achieve the SCO exceed it only by a small amount.

The two non-COC parameters that did not meet UUSCOs at sample location EP-4 on Lot 54 were Selenium and Acetone. Selenium was detected at 19 mg/kg and Acetone was detected at 0.074 mg/kg. Selenium did not exceed UUSCOs at any other sampling location across the entire Site. Acetone only exceeded UUSCOs at two other sampling locations across the Site at concentrations of 0.063 mg/kg and 0.060 mg/kg. Therefore, based upon compliance averaging, the Selenium and Acetone concentrations in Lot 54 meet UUSCOs as a whole (**Appendix M**). Further, the Acetone detected at is a common laboratory reagent and could well be associated with laboratory induced cross contamination.

Due to the depth of excavation, Track 1 UUSCOs were achieved for all soils to a

depth of 15 ft bgs at Lots 1 and 2. At greater depths, Track 2 RRSCOs and PGWSCOs were also achieved at Lots 1 and 2. The Decision Document did not apply the Protection of Ecological Resource SCOs since the full development of the land precludes the existence of an ecological resource.

The confirmation samples for soils remaining at depth in Lot 1met both the Residential Use SCOs and the RRSCOs, and met PGWSCOs except for Acetone which was detected at concentrations of 0.063 mg/kg and 0.060 mg/kg slightly above the PGWSCO of 0.05 mg/kg. There was only one other detection of Acetone in excess of the PGWSCO at the other sampling locations across the Site where it was detected at a concentration of 0.074 mg/kg. Based upon compliance averaging, the Acetone in the soil at Lot 1 also achieves the PGWSCO. Further, the concentration of Acetone beneath Lot 1 met the applicable water quality standard of 5 ug/L in all the three performance groundwater monitoring events. Acetone was in fact only detected in the onsite groundwater once during the October event and then only at a result less that the quantitation limit.

The confirmation samples for soils remaining at depth in Lot 2 also met RRSCOs and PGWSCOs except for Chrysene which was detected at EP-51 at +30 ft. bgs at a concentration of 1.4 mg/kg slightly above the PGWSCO of 1.0 mg/kg. Chrysene was not detected in excess of the PGWSCO at any other sampling location across the Site. Based upon compliance averaging, the Chrysene in the soil at Lot 2 also achieves the PGWSCO. A table and figure summarizing all end-point sampling is included in **Table 2** and **Figure 4B**, respectively, and all exceedances of SCOs are highlighted.

Data Usability Summary Reports (DUSRs) were prepared for all data generated in this remedial performance evaluation program. These DUSRs are included in **Appendix R**, and associated raw is provided electronically in **Appendix P**.

4.4.2 Groundwater Remedial Performance/Documentation Sampling

On July 23, August 13, and October 10, 2018, GZA installed post-excavation monitoring wells MW-1, 2, 3, and 4 at the Site per the RAWP in the northwest corner of the Site. On August 22, 2018, October 4-15, 2018, and November 1, 2018, GZA collected three rounds of groundwater samples from these four wells.

Figure 5B presents the results for VOCs and SVOCs. **Figure 5C** presents the results for Per- and Poly-Fluoroalkyl Substances (PFAS). The data demonstrates the effectiveness of the excavation/ISCO remedy at achieving a bulk reduction of contaminants potentially emanating from Site groundwater (**Tables 3A through 3C)**.

By the 2nd round of performance groundwater sampling in October, CVOCs in the on-site monitoring well MW-3 were at or below their respective water quality standard and off-site had decreased in concentration to levels lower than or consistent with the levels detected during the RI at upgradient wells and representing off-site sourced contaminants migrating through and beneath the site. The highest concentration of PCE (130 ug/L) detected during the RI was detected in MW-3 which is located in an upgradient position. Consistent with this finding, the Decision Document determined that "the highest PCE concentrations were detected upgradient of any known on-site source area and at the upgradient edge of the site."

By the 3rd round of performance groundwater sampling in November, dissolved petroleum VOCs or Naphthalene were no longer present in the on-site groundwater beneath the Lot 1 source area, and of all CVOCs, only PCE was still being detected on-site, and then only at 2.3 ug/L.

Further, the three rounds of performance sampling already demonstrate that the contaminants associated with on-site sources are or will be at asymptotic conditions in the site groundwater as required of a volunteer per 6 NYCRR 375-3.8(e)(1)(iii).

Another indicator of the success of the excavation and the effectiveness of the PersulfOX® in remediating the groundwater is the decrease in Cis-1,2-Dichloroethene from 6.3 ug/L, 1.1 ug/L, and 22 ug/L detected during the 1st round of groundwater sampling in August to below the water quality standard (2.3 ug/L, ND, 1.6 ug/L, and ND) during the 2nd round of groundwater sampling in October, to non-detect in the 3rd round of groundwater sampling in November. Similarly, Trichloroethylene, which was detected 2.0 ug/L, 1.4 ug/L, and 5.7 ug/L during the 1st round of groundwater sampling in August, is no longer being detected at all in October and November, which is a further demonstration of the efficacy of the PersulfOX® breaking down the PCE.

Another indicator of the success of the excavation and the effectiveness of the

PersulfOX® in remediating the groundwater is the decrease in 1,2,4-Trimethylbenzene from the 91 ug/L detected beneath Lot 1 during the RI to the 4 ug/L during the 1st round of post-remedy groundwater sampling in August, to the non-detection during the 2nd round of groundwater sampling in October and the 3rd round in November.

Although Naphthalene was detected in on-site well MW-3 at a result below the quantitation limit but greater than the MDL during the 1st round of post-remedy groundwater sampling in August, it was non-detect in well MW-3 during the 2nd round of groundwater sampling in October and the 3rd round in November. Off-site, Naphthalene was detected at a concentration of 13 ug/L and 17 ug/L in well MW-1 during the 1st and 2nd rounds of groundwater sampling, slightly above its water quality standards of 10 ug/L, and then, at a concentration of 220 ug/L in off-site well MW-2 during the 3rd round in November (while the concentration of Naphthalene in off-site well MW-1 fell to 1.9 ug/L during the 3rd round in November). Given that the RI detected Naphthalene at 16,000 mg/Kg in the soil of Lot 1 prior to remediation, and now the on-site performance monitoring well MW-3 no longer detects any Naphthalene, this again demonstrates the effectiveness of the combination of deep excavation and the in-situ chemical oxidation at remediating groundwater.

Similarly, 1,2,4,5-Tetramethylbenzene has not been detected in on-site groundwater since the 1st round of groundwater quality monitoring in August, and is now only being detected in off-site groundwater during the 3rd round of sampling in November at concentrations slightly above its water quality standards of 5 ug/L, i.e., at 3.7 ug/L in MW-1 and 11 ug/L in MW-2.

Although anomalous concentrations of Acetone and 2-Butanone (solvents associated with PVC glue) were detected at concentrations of 4,500 ug/L and 43,000 ug/L, respectively, in downgradient, off-site monitoring well MW-4 during the 2nd round of groundwater sampling in October, by the 3rd round in November, their concentrations had decreased by more than an order of magnitude to 150 ug/L and 910 ug/L, respectively. Acetone and 2-Butanone were not identified as a COC for the Site and appear to be associated with the artifact construction activities during the remedy. This order of magnitude decrease over the course of a month is further evidence of the effectiveness of the PersulfOX® in remediating even unanticipated off-site groundwater

contamination.

In August, the concentrations of PFAS in groundwater at the Site were assessed. Both the on-site and off-site samples were found to have PFAS distributed in a tight range from 138 ng/L to 146 ng/L. Given the consistent range of PFAS observed in both the on-site and off-site wells, the PFAS detected appear to be part of an area-wide or regional issue. Details are provided in the letter submitted to NYSDEC on October 18, 2018 (**Appendix O**).

In addition, although fill material related contaminants (Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Indeno(1,2,3-cd)pyrene, and Phenol) were not detected in on-site well MW-3 during the 1st and 2nd rounds of groundwater sampling event, since Lot 1 has been under active construction, there were estimated and minor sporadic detections in the well during the 3rd round, which detections will abate after construction is completed. The turbidity reading in MW-3 during the 3rd round was 45 ntu at the time of sampling due to ongoing construction activities. Further, the following parameters (that were detected during the RI in the groundwater above their respective water quality standard) are no longer detected in the Lot 1 groundwater above the applicable SCGs: 2- Isopropyltoluene, N-Butylbenzene, 4,4'-DDD, and Dieldrin.

The post-remedy groundwater monitoring already shows that a bulk reduction in groundwater contamination has been effectively or will be achieved to applicable water quality standards for contaminants sourced on the Site and that long term (for greater than 5 years) institutional or engineering controls are not needed for groundwater for any contaminants sourced on the Site.

4.5 CONTAMINATION REMAINING AT THE SITE

4.5.1 Soil

All remaining soils to a depth of 15 ft bgs meet UUSCOs for all parameters due to the depth of excavation across the Site. All remaining soils at depth meet UUSCOs for

all COCs, except for a single detection of Chrysene at +30 ft. bgs beneath Lot 2 Non-COC parameters (4,4'-DDD, 4,4'-DDT, 4,4'-DDE, Mercury, Selenium and Acetone) are sporadically detected in the remaining soils in Lots 1, 2 and 54 at depths ranging from 15 ft. bgs to +30 ft. bgs, although most meet the Residential SCOs and RRSCOs . With respect to all of non-COC parameters detected in remaining soil, none were detected in on-Site groundwater above water quality standards (Table 2) and **Figure 4B** summarizes the results of end point confirmation soil samples collected.

4.5.2 Groundwater

Due to the effectiveness of the excavation/ISCO remedy, groundwater beneath the Site meets or will meet SCGs for all site-sourced contaminants. The petroleum compounds still being detected in the groundwater approximate the ambient water quality standards. The CVOCs still being detected in the groundwater are consistent with the upgradient off-site source documented in the RI and the RAWP and evidence a bulk reduction due to the ISCO placed in Lots 1 and 2 during the remedy.

There are also PFAS being detected as a result of a plume of off-site sourced groundwater contamination migrating through and beneath the Site.

Table 3 summarizes the results of all samples of groundwater that exceed the applicable SCGs. Please refer to **Figures 5A and 5B** for a depiction of the distribution of remaining groundwater impacts relative to the Site. **Figure 5A** illustrates the pre-remediation Site-related plume of groundwater contamination beneath Lots 1 and 2, as well as the plume of off-site sourced groundwater concentration beneath Lots 3, 4, 54, 55, and 57. **Figure 5B** shows the post-remediation groundwater results collected in August, October and November, 2018.

4.5.3 Soil Vapor

Soil vapor intrusion sampling of the installed sub-slab depressurization piping and vapor barrier was completed for each of the three buildings which have been constructed on the Site detected concentrations in the sub-slab vapor of PCE, Acetone, Chloroform, 1,1,1-Trichloroethane, Dichlorodifluoromethane, Chloromethane, 1,3-Butadiene, Ethyl Alcohol, Trichlorofluoromethane, Iso-Propyl Alcohol, Tert-Butyl Alcohol, Carbon Disulfide, 2-Butanone, Tetrahydrofuran, n-Hexane, Benzene, Cyclohexane, 1-4 Dioxane,

2,2,4-Trimethylpentane, Heptane, 4-Methyl-2-Pentanone, Toluene, 2-Hexanone, Ethylbenzene, p/w-Xylene, o-Xylene, 1,3,5-Trimethylbenzene, and 1,2,4-Trimethylbenzene.

The building on Lot 2 is known as Building C, the building on Lot 3 is known as Building B and the building on Lot 4 is known as Building A. **Figure 6B** shows the sampling locations for the post-remedial soil vapor intrusion sampling done to date.

The only VOC detected in sub-slab vapor that exceeded the minimum value for "Sub-Slab Vapor Concentration" listed along the vertical axis of the applicable Soil Vapor/Indoor Air Matrices dated May 2017 of the NYSDOH's Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH SVI Guidance) was PCE. It was detected in the sub-slab soil gas collected in Building A at a concentration of 441 $\mu g/m^3$, which is above the Matrix B minimum value of 100 $\mu g/m^3$.

The indoor air in Building A, however, showed PCE at concentrations of 1.16 $\mu g/m^3$, 0.8 $\mu g/m^3$, 0.312 $\mu g/m^3$, in the basement, cellar and first floor, respectively. These results are below the minimum value of 3 $\mu g/m^3$ in the "Indoor Air Concentration" listed along the horizontal axis of Matrix B . As per the NYSDOH decision Matrix B, taken together the combined sub-slab/indoor air results indicate that "no further action" is required for the PCE.

None of the samples analyzed from the Buildings B and C exhibited PCE at concentrations above the respective minimal values for "Sub-Slab Vapor Concentration" or "Indoor Air Concentration" in Matrix B and Matrix A.

Further, the entire footprints of Lots 2, 3 and 4 have a concrete cover with a vapor barrier (the passive basement ventilation system) installed to address soil vapor intrusion from the remaining contaminants in groundwater originating off-Site. Figure 6B shows the sub-slab/indoor air sampling locations in Buildings A, B and C; Table 4 illustrates the results of the sub-slab/indoor sampling in Buildings A, B, and C after completion of the remediation and installation of the passive basement ventilation system.

Nevertheless, since off-site, upgradient groundwater with contamination continues to migrate through and beneath the Site after completion of the remedial action, Institutional and Engineering Controls, including soil vapor intrusion sampling of any

new building to be constructed on the Site, are required to protect human health and the environment. These Engineering and Institutional Controls (ECs/ICs) are described in the following sections. Long-term management of these EC/ICs and the off-site groundwater contamination will be performed under the Site Management Plan (SMP) approved by the NYSDEC.

4.6 SOIL COVER SYSTEM AND PERFORMANCE GROUNDWATER MONITORING FOR LOTS 1 AND 2

4.6.1 Soil Cover System For Lots 1 And 2

Exposure to remaining soil contamination on Lots 1 and 2 at the Site is prevented by a cover system comprised of the concrete rat slab and the recently poured concrete basement floor slab for Building D (Lot 1), and the concrete basement floor slab and paved driveway and parking (Lot 2/Building C). In addition, the area of Lot 1 that will not be covered by the concrete floor slab will be covered by paved driveway and parking. Although not part of the Site's cover system, it is noted that immediately adjacent to the Site where pedestrians and the public have access consists of a concrete sidewalk, the reference to which is included here for completeness and not because the public sidewalk is part of the cover system. No exposed soils will be present at the Site, and the public or Site workers will not have access to or direct contact with soils containing residual contamination which are located at depths of 15-32 ft bgs.

Figure 7 shows the extent/location of each cover type built at the Site. **Figure 8** shows the as-built cross sections for each remedial cover type used on the Site. An Excavation Work Plan, which outlines the procedures required in the event the cover system is breached and/or the underlying residual soil contamination is disturbed, is provided in **Appendix A** of the SMP.

4.6.2 Performance Groundwater Monitoring For Lots 1 And 2

Groundwater monitoring of the four performance monitoring wells pursuant to the SMP will be on a quarterly basis to assess the performance of the excavation and ISCO remedy at Lots 1 and 2, and whether additional injection of PersulfOX® are required to achieve asymptotic conditions for the dissolved petroleum in the groundwater beneath the

building foundation on Lots 1 and 2. Modification to the frequency or sampling requirements will require approval from the NYSDEC. The Monitoring Plan in the SMP also addresses inspection procedures that must occur after any severe weather condition has taken place that may affect on-site ECs.

4.7 IMPORTED BACKFILL

There was a total of 659.74 tons of clean soil imported to backfill the deep excavation areas (i.e. the source area in Lots 1 and 2). Tables summarizing chemical analytical results for backfill, in comparison to allowable levels, are provided in **Appendix L**. The following information was included in the package:

- The origin of the material;
- The address of the facility which mines/processes the material;
- A letter from the facility stating that the material to be delivered to the site is a virgin mined material and that it has not been co-mingled with other materials during processing or stockpiling.

A figure showing the site locations where backfill was used at the site is shown in **Figure 3**.

4.8 OTHER ENGINEERING CONTROLS

Since remaining contaminated groundwater exists beneath the entire Site as a result of the upgradient, off-site contaminated water migrating through and beneath the Site, one Engineering Control (EC) is required to protect human health and the environment in addition to the cover system and performance groundwater monitoring for Lots 1 and 2 described in Section 4.7 above, both of which are components of the Site Management Plan (SMP) for the Site: an SVI Abatement Plan. The Site has the following other Engineering Control, as described in the following subsections.

4.8.1 Sub-Slab Depressurization Systems

Piping for a Sub-Slab Depressurization System (SSDS) and a vapor barrier will be required by the SMP to be installed beneath the basement slab of every building constructed on the Site, followed by the collection of paired sub-slab soil gas/indoor air samples before the building is occupied to evaluate whether the SSDS will need to be

activated pursuant to the NYSDOH SVI Guidance. In addition, piping for the SSDS and the vapor barrier has been installed under Buildings D, E and F, which are under construction. Only Building G, which is not yet under construction, requires installation of the SSDS piping and vapor barrier.

As discussed above, the buildings already constructed on Lots 2, 3 and 4 (Building C, B, and A, respectively) have had piping for a SSDS and a vapor barrier installed beneath their basement floor slabs, and the subsequent paired sub-slab soil vapor/indoor air samples collected indicated that "no further action" is required.

The piping for a SSDS installed beneath the vapor barrier will intercept any potential residual vapors from contaminants remaining in the groundwater before entering the buildings. The piping for the SSDS under building G will be placed under the footprint of the building except in the case of a parking garage. The sub-grade parking garage's soil vapor intrusion pathway will be adequately addressed by the NYC Mechanical Code which requires proper ventilation.

Specifically, perforated schedule 40 PVC pipe was or will be installed in a minimum 10-inch thick gas permeable aggregate layer beneath the respective building's basement floor slab. A cushion geotextile and then a vapor barrier was or will be placed on top of the aggregate layer. Then vertical riser pipes and, if required by the results of the subsequent sub-slab vapor and indoor air sampling, suction fans will be installed before the building is occupied. As discussed above in Sections 4.3.3 and 4.7, the basement floor slab for Building D (Lot 1) has been recently poured over gravel containing the sub-slab depressurization piping and a vapor barrier. The SMP will require that the post-remedial soil vapor intrusion evaluation be completed prior to occupying any buildings developed on the Site, including Building D. The relevant SSDS will be activated if future needs require or if the post-remedial testing under the SMP indicates it is necessary.

Procedures for monitoring, operating and maintaining an activated SSDS, if required, are provided in the Operation and Maintenance Plan in Section 5 of the SMP.

4.9 INSTITUTIONAL CONTROLS

The site already has an environmental easement in place on the property that requires the owner to: (1) implement, maintain and monitor the Engineering Controls; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface remaining soil contamination beneath Lots 1 and 2 and in by prohibiting the use of groundwater; and (3) limit the use and development of Lots 1 and 2 to restricted residential, commercial and industrial uses only. Although no longer necessary since Track 1 conditions were attained at Lots 3, 4, 54, 55 and 57, the environmental easement also limits the use and development of those Lots, i.e., the entire Site, to restricted residential, commercial and industrial uses consistent with zoning.

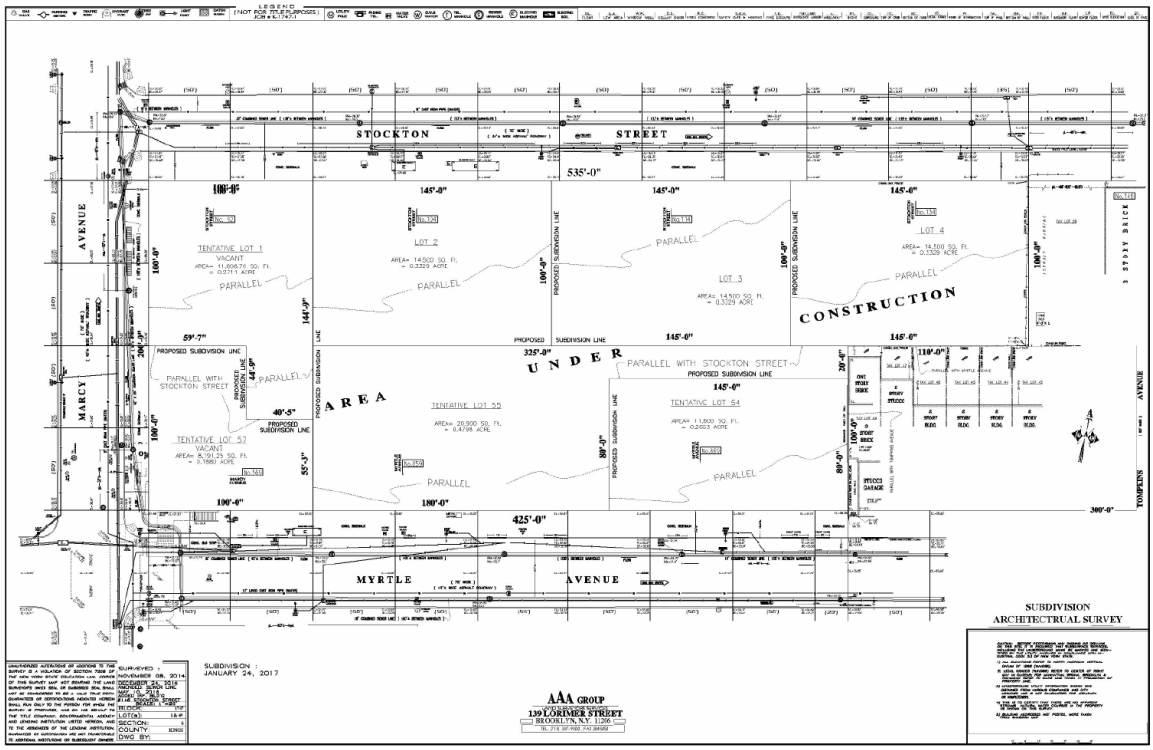
The NYSDEC-approved environmental easement for the Site was executed before the remedy was fully implemented by Cascade 553 LLC on July 20, 2017 and by NYSDEC on September 9, 2017. The environmental easement was filed with the NYS Department of Finance, Office of City Register, on November 30, 2017. The Document Identifier number for this filing is 2017111300343001. A copy of the environmental easement and proof of filing is provided in **Appendix C**.

4.10 DEVIATIONS FROM THE REMEDIAL ACTION WORK PLAN

Deviations from the approved-RAWP occurred during the implementation of the excavation and placement of the ISCO resulting in the excavation of additional impacted soil and the placement of additional PersulfOX®. Refer to Section 4.3 for further details.

APPENDIX 'B'

Survey



APPENDIX 'C'

Environmental Easement

NYC DEPARTMENT OF FINANCE
OFFICE OF THE CITY REGISTER

This page is part of the instrument. The City Register will rely on the information provided by you on this page for purposes of indexing this instrument. The information on this page will control for indexing purposes in the event of any conflict with the rest of the document.

2017111300343001003EC623

RECORDING AND ENDORSEMENT COVER PAGE **PAGE 1 OF 11**

Document ID: 2017111300343001 Document Date: 09-11-2017 Preparation Date: 11-30-2017
Document Type: EASEMENT
Document Page Count: 9

PRESENTER:
FIRST AMERICAN TITLE
666 THIRD AVENUE
878675 ACCOM
NEW YORK, NY 10017
212-551-9421
MLETTIERI@FIRSTAM.COM

RETURN TO:
BARCLAY DAMON LLP
125 EAST JEFFERSON STREET
SYRACUSE, NY 13202

PROPERTY DATA

Borough	Block	Lot		Unit	Address
BROOKLYN	1747	1	Entire Lot		92 STOCKTON STREET

Property Type: COMMERCIAL REAL ESTATE Easement

Borough	Block	Lot		Unit	Address
BROOKLYN	1747	2	Entire Lot		104 STOCKTON STREET

Property Type: APARTMENT BUILDING Easement

☒ Additional Properties on Continuation Page

CROSS REFERENCE DATA

CRFN_____ *or* DocumentID_____ *or* _____ Year_____ Reel____ Page_____ *or* File Number_____

PARTIES

GRANTOR/SELLER:
CASCADE 553 LLC
246 LYNCH STREET, UNIT 1A
NEW YORK, NY 11206

GRANTEE/BUYER:
PEOPLE OF THE STATE OF NEW YORK BY
COMMISSIONER
625 BROADWAY
ALBANY, NY 12233

FEES AND TAXES

Mortgage :		
Mortgage Amount:	$	0.00
Taxable Mortgage Amount:	$	0.00
Exemption:		
TAXES: County (Basic):	$	0.00
City (Additional):	$	0.00
Spec (Additional):	$	0.00
TASF:	$	0.00
MTA:	$	0.00
NYCTA:	$	0.00
Additional MRT:	$	0.00
TOTAL:	$	0.00
Recording Fee:	$	99.00
Affidavit Fee:	$	0.00

Filing Fee:	$	100.00
NYC Real Property Transfer Tax:	$	0.00
NYS Real Estate Transfer Tax:	$	0.00

RECORDED OR FILED IN THE OFFICE OF THE CITY REGISTER OF THE CITY OF NEW YORK
Recorded/Filed 12-04-2017 10:43
City Register File No.(CRFN): **2017000442656**

City Register Official Signature

NYC DEPARTMENT OF FINANCE
OFFICE OF THE CITY REGISTER

2017111300343001003CC4A3

RECORDING AND ENDORSEMENT COVER PAGE (CONTINUATION) **PAGE 2 OF 11**

Document ID: 2017111300343001 Document Date: 09-11-2017 Preparation Date: 11-30-2017
Document Type: EASEMENT

PROPERTY DATA

Borough	Block	Lot		Unit	Address
BROOKLYN	1747	3	Entire Lot		114 STOCKTON STREET
Property Type: APARTMENT BUILDING Easement					
Borough	**Block**	**Lot**		**Unit**	**Address**
BROOKLYN	1747	4	Entire Lot		134 STOCKTON STREET
Property Type: APARTMENT BUILDING Easement					
Borough	**Block**	**Lot**		**Unit**	**Address**
BROOKLYN	1747	54	Entire Lot		869 MYRTLE AVENUE
Property Type: COMMERCIAL REAL ESTATE Easement					
Borough	**Block**	**Lot**		**Unit**	**Address**
BROOKLYN	1747	55	Entire Lot		859 MYRTLE AVENUE
Property Type: COMMERCIAL REAL ESTATE Easement					
Borough	**Block**	**Lot**		**Unit**	**Address**
BROOKLYN	1895	61	Entire Lot		569 MYRTLE AVENUE
Property Type: COMMERCIAL REAL ESTATE Easement					

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this 11th day of September, 2017 between Owner(s) Cascade 553 LLC, having an office at 246 Lynch Street, Unit 1A, Brooklyn, New York 11206, County of Kings, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the following (7) addresses: (i) 92 Stockton Street; (ii) 104 Stockton Street; (iii) 114 Stockton Street; (iv) 134 Stockton Street; (v) 869 Myrtle Avenue; (vi) 859 Myrtle Street; and (vii) 560 Marcy Avenue, all in the Borough of Brooklyn, City of New York, County of Kings and State of New York, known and designated on the tax map of the New York City Department of Finance as tax map parcel number: Block 1747 Lots 1, 2, 3, 4, 54, 55 and 57, respectively, being the same as that property conveyed to Grantor by deed dated March 6, 2015 and recorded in the City Register of the City of New York as CRFN #2015000112448. When Grantor purchased the property in 2015, all seven lots comprised of one tax lot. Grantor subsequently divided the single lot into the seven above referenced internal tax map lots, as reflected in a Confirmatory Deed dated May 18, 2017 and recorded in the City Register of the City of New York as CRFN #2017000192474, and in a Confirmatory Deed dated June 20, 2017 and recorded in the City Register of the City of New York as CRFN #2017000233606. The property subject to this Environmental Easement (the "Controlled

Property") comprises approximately 2.1577 +/- acres, and is hereinafter more fully described in the Land Title Survey dated February 22, 2015 and last revised May 15, 2017 prepared by Vincent M. Teutonico, L.L.S. of AAA Group Land Surveyor's Services, which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Brownfield Cleanup Agreement Index Number: C224194-12-14 as amended June 21, 2017, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement")

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Restricted Residential as described in 6 NYCRR Part 375-1.8(g)(2)(ii), Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

(4) The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the New York City

Department of Health and Mental Hygiene to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;

(5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(7) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved b the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5) the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to: Site Number: C224194
Office of General Counsel

NYSDEC
625 Broadway
Albany New York 12233-5500

With a copy to:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

Remainder of Page Intentionally Left Blank

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

Cascade 553 LLC:

By: _____

Print Name: ABRAHAM BLACH

Title: MANAGING MEMBER Date: 7/20/17

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF KINGS)

On the 20 day of JULY, in the year 2017, before me, the undersigned, personally appeared ABRAHAM BLACH, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

_____
Notary Public - State of New York

DAVID KATZ
Notary Public, State of New York
No. 01KA6099314
Qualified in Kings County
Commission Expires Sept. 29, 2019

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner.

By: _____
Robert W. Schick, Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ALBANY)

On the 11 day of September, in the year 2017 before me, the undersigned, personally appeared Robert W. Schick, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public - State of New York

David J. Chiusano
Notary Public, State of New York
No. 01CH5032146
Qualified in Schenectady County
Commission Expires August 22, 2018

SCHEDULE "A" PROPERTY DESCRIPTION

LEGAL DESCRIPTION OF THE EASEMENT AREA

Former Lot 1, now known as Lots 1, 2, 3, 4, 54, 55 and 57:

ALL that certain plot, piece or parcel of land, situate, lying and being in the Borough of Brooklyn, County of Kings, City and State of New York, more particularly bounded and described as follows:

BEGINNING at the corner formed by the intersection of the southerly side of Stockton Street with the easterly side of Marcy Avenue;

RUNNING THENCE easterly, along the southerly side of Stockton Street, 535 feet,

THENCE southerly parallel with Marcy Avenue, 100 feet,

THENCE westerly parallel with Stockton Street, 130 feet,

THENCE southerly parallel with Marcy Avenue, 100 feet to the northerly side of Myrtle Avenue;

THENCE westerly, along the northerly side of Myrtle Avenue, 405 feet to the corner formed by the intersection of the northerly side of Myrtle Avenue with the easterly side of Marcy Avenue;

THENCE northerly, along the easterly side of Marcy Avenue, 200 feet to the corner, the point or place of BEGINNING.

AREA OF LOT = 99,990.18 SQ. Ft = 2.1577 ACRES.