555 GRAND STREET SITE

555 GRAND STREET
BROOKLYN, NEW YORK
Block 2779 Lot 31

Final Engineering Report

NYSDEC Site Number: C224185

Program Volunteer:

555 Grand Units, LLC
183 Wilson Street, Suite 133
Brooklyn, NY 11211

AMC Engineering PLLC
18-36 42nd Street
Astoria, NY 11105

NOVEMBER 2019

CERTIFICATIONS

I, Ariel Czemerinski certify that I am currently a NYS registered professional engineer, I had primary direct responsibility for the implementation of the subject construction program, and I certify that the Remedial Work Plan was implemented and that all construction activities were completed in substantial conformance with the DER-approved Remedial Work Plan, except as noted in Section 4.9: Deviations from the Remedial Action Work Plan.

I certify that this Final Engineering Report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

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 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.

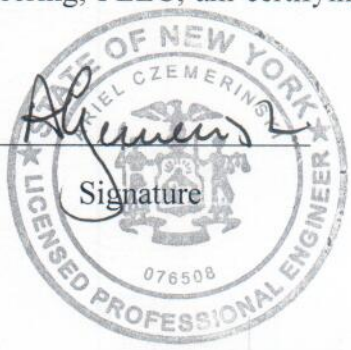
I certify that a Site Management Plan has been submitted for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, including the proper maintenance of all remaining monitoring wells, and that such plan has been approved by Department

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, Ariel Czemerinski, of AMC Engineering, PLLC, am certifying as Owner's Designated Site Representative for the site.

076508	11/20/19	
NYS Professional Engineer #	Date	Signature



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ATTACHMENTS (DIGITAL FILES ON CD)

LIST OF ACRONYMS

Acronym	Definition
AMC	AMC Engineering PLLC
AWQS	Ambient Water Quality Standards
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
BTEX	Benzene, Toluene, Ethylbenzene and Xylene
CQMP	Construction Quality Management Plan
EBC	Environmental Business Consultants
FER	Final Engineering Report
IRM	Interim Remedial Measure
LPH	Liquid Phase Hydrocarbons
NYC	New York City
NYCDEP	New York City Department of Environmental Protection
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
EP	Qualified Environmental Professional
RAO	Remedial Action Objectives
RAWP	Remedial Action Work Plan
RE	Remedial Engineer
RI	Remedial Investigation
SCG	Standards, Criteria, and Guidelines
SCO	Soil Cleanup Objectives
SMMP	Soil/Materials Management Plan
SSO	Site Safety Officer
SWPPP	Stormwater Pollution Prevention Plan
SVOCs	Semi-Volatile Organic Compounds
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds

1.0 BACKGROUND AND SITE DESCRIPTION

1.1 SITE BACKGROUND

555 Grand Units, LLC (the Volunteer) entered into a Brownfield Cleanup Agreement with the New York State Department of Environmental Conservation (NYSDEC) on September 1, 2015 to remediate a 0.058-acre (2,525 sf) property located in Brooklyn, Kings County, New York (Site No. C224185). The Site was remediated to restricted-residential use. An electronic copy of this FER with all supporting documentation is included as **Attachment A**.

1.2 SITE LOCATION

The site is located at 555 Grand Street, in the Williamsburg section of Brooklyn, Kings County, New York and is identified as Block 2779 and Lot 31 on the Brooklyn Tax Map (**Figure 1**). The site is an approximately 0.058-acre area (2,525 square feet), and is bounded by Power Street to the north, Grand Street to the south, Lorimer Street to the east, and Union Avenue to the west (see **Figure 2**– Site Plan Map). **Figure 2** includes the site boundary including tax parcels. The boundaries of the site are more fully described in **Attachment B**–Environmental Easement.

The property has an elevation of approximately 52 feet above the National Geodetic Vertical Datum (NGVD). The depth to groundwater beneath the Site, as determined from field measurements, is approximately 22.5 feet below grade. Based upon regional groundwater contour maps, groundwater flow is expected to be east.

1.3 INVESTIGATION AND REMEDIAL HISTORY

The following narrative provides a remedial history timeline and a brief summary of the available project records to document key investigative and remedial milestones for the Site. Full titles for each of the reports referenced below are provided in Section 8.0 - References.

1.3.1 PHASE I REPORTS

June 2013 – Phase I Environmental Site Assessment Report by EBC

A Phase I Environmental Site Assessment (ESA) was completed by Environmental Business Consultants (EBC), in June of 2013 for the site. EBC was able to establish a history for the property dating back to 1887. In 1887 the site was developed with the current three-story mixed use commercial residential building. According to historical city directories, the Site has been

occupied by multiple commercial tenants such as, Slavin Building Co, Louis Lewitzky Dry Goods, Lewis Miracle Dollar Store, Rama Building Corp, Louis Bargain Department Store, Mayflower Bargain Store, Joel Bargain Store and Tru Val Cleaners. The Tru Val cleaners has been on-site since at least 1999 according the owners of the Site. In addition, the Site has been occupied by multiple commercial tenants since 1928. Historical sources and owner interviews indicate that Tru Val Cleaners was formerly located at 568 Grand Street from approximately 1960 to 2000. The presence of an on-site dry cleaner represents a REC due to the typical use of PCE associated with operations.

According to the regulatory database, the Site is listed as a RCRA SQG, US AIRS, E Designation, FINDS, NY Drycleaners and an EDR US Historic Cleaners sites. These listings are in association with the occupancy of the site as an on-site dry cleaner and according to the regulatory database, no violations were listed for the Site. The Site is equipped with an on site dry cleaning machine; Real Star 323 (RS 323); which is located on the east side of the 1st floor of site. EBC noted that the basement is below this area. Approximately four (4) 10-gallon containers of used tetrachloroethene ("perc", PCE, dry-cleaning fluid) were observed on the east side of the site adjacent to the RS 323. No secondary containment was noted under these containers.

Based upon reconnaissance of the subject and surrounding properties, interviews and review of historical records and regulatory agency databases, EBC noted the following recognized environmental conditions for the subject site.

- Occupancy of the first floor / cellar of the Site as an on-site drycleaner from at least 1999 and the use and storage of tetrachloroethene within the dry cleaning process.

1.3.2 PHASE II REPORTS (REMEDIAL INVESTIGATION REPORTS)

August 2013 [Revised March 2014] – Remedial Investigation Report by EBC

The remedial investigation was performed from July 29, 2013 through August 20, 2013 in accordance with the Remedial Action Work Plan approved by the NYCOER as part of the E-designation review process. The goals of the Remedial Investigation were to define the nature and extent of contamination in soil, groundwater and any other impacted media; to identify the source(s) of the contamination; to assess the impact of the contamination on public health and/or the environment; and to provide information to support the development of a Remedial Work Plan to address the contamination.

Activities completed under the RI:

- Soil sampling and analysis for volatile and semi-volatile organic compounds (VOCs, SVOCs) in soil samples from soil boring locations;
- The installation of groundwater monitoring wells;
- The collection and analysis of groundwater samples for volatile and semi-volatile organic compounds;
- Sampling for non-petroleum contaminants such as pesticides, PCBs and metals in soil and groundwater including the analysis of soil and groundwater samples;
- The collection of analysis of subslab soil gas samples for VOCs.

The field work portion of the RI was conducted by Environmental Business Consultants (EBC) from July 29, 2013 through August 20, 2013, in accordance with the protocols and methods as established in the approved Remedial Investigation Work Plan).

The results of the RI identified elevated levels of both tetrachloroethene (PCE) and trichloroethene (TCE) in soil gas above mitigation levels established within the State DOH soil vapor guidance matrix. TCE concentrations in soil gas ranged from 84.8 µg/m3 to a high of 623 µg/m3. PCE concentrations ranged from 7,730 µg/m3 to 228,000 µg/m3. PCE and TCE were detected in all soil gas samples obtained as well as both the indoor and outdoor air samples.

Groundwater was encountered at a depth of approximately 22.5 feet below grade. Low levels of PCE were detected in the groundwater samples from MW1, at a concentration below the GQS. No other VOCs were detected.

SVOCs including benzo(a)anthracene, benzo(b)fluoranthene, and chrysene were reported above unrestricted use soil cleanup objectives (SCOs) in shallow soil (2-4ft) at one boring location, B3.

One or more metals including arsenic, copper, lead, and mercury were reported above restricted residential SCOs in shallow soil in all three boring locations. Zinc and cadmium were reported above unrestricted SCOs at one boring location, B3. Elevated levels of SVOCs and metals reported in shallow soil throughout the site are characteristic of the historic fill materials present at the site and throughout the area.

1.3.3 REMEDIAL ACTION

March 2014 – Remedial Action Work Plan by AMC

In response to the findings during the RI, a Remedial Action Work Plan (RAWP) was prepared by AMC in March 2014. The proposed remedy is a Track 4 alternative, which calls for the excavation between minimal excavation to 5 feet below existing cellar grade for underground structures, installation of a Soil Vapor Extraction (SVE) system beneath the existing basement foundation, eventual conversion of the SVE system into an active sub-slab depressurization system (SSDS); installation of an epoxy/polymer sealant across the entire basement slab, and the installation of a composite cover system across the entire site.

Endpoint samples collected for laboratory analysis revealed that this site met the Track 4 SCOs. Addendums to the June 2015 RAWP, consisting of the SVE design work plan, were submitted to the NYSDEC for approval. This document was approved by NYSDEC on October 3, 2018.

2.0 SUMMARY OF SITE REMEDY

2.1 REMEDIAL ACTION OBJECTIVES

The Remedial Action Objectives (RAOs) for the Site as listed in Decision Document dated April 23, 2014 are as follows:

2.1.1 SOIL

RAOs for Public Health Protection

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

2.1.2 SOIL VAPOR

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

2.1.3 GROUNDWATER

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Restore groundwater aquifer to pre-disposal/pre-release conditions to the extent practicable.

2.2 DESCRIPTION OF IMPLEMENTED REMEDY

The Site was remediated in accordance with the remedy selected by the Remedial Action Work Plan dated March 2014, and the Decision Document dated April 23, 2014. The factors considered during the selection of the remedy are those listed in 6NYCRR 375-1.8.

The following are the components of the implemented remedy:

1. Removal of the underground storage tank (UST), piping and appurtenances;

2. Excavation of soil/fill exceeding Track 4 restricted residential SCOs as listed in **Table 1** to a depth as great as 10 feet below grade for a majority of the building footprint and 11.25 feet for three areas on the south side of the site due to the presence of boulders);
3. Treatment of residual soil via Sub Slab Depressurization system (SSDS);
4. Screening for indications of contamination (by visual means, odor, and monitoring with PID) of all excavated soil during any intrusive Site work;
5. Collection and analysis of end-point soil samples to evaluate the performance of the remedy with respect to attainment of protection of groundwater SCOs for those constituents in soil found to be impacting groundwater, to restricted-residential SCOs for remaining constituents in the top 15 feet of soil and to groundwater standards;
6. Appropriate off-Site disposal of all material removed from the Site in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal;
7. Import of materials to be used for backfill and cover in compliance with: (1) chemical limits and other specifications included in Table 1, (2) all Federal, State and local rules and regulations for handling and transport of material.
8. Implementation of a Site Management Plan (SMP) for short term (less than 5 years) operation, monitoring and maintenance of the Engineering Controls.
9. On 9/29/2016 an Environmental Easement was filed against the Site with the City Registrar to ensure implementation of the SMP.

All responsibilities associated with the Remedial Action, including permitting requirements and pretreatment requirements, were addressed in accordance with all applicable Federal, State and local rules and regulations.

Details on each of the remedial elements listed above are provided in Sections 4.2 through 4.7.

3.0 INTERIM REMEDIAL MEASURES

3.1 INTERIM REMEDIAL MEASURES WORK PLAN (IRM)

The remedy for this Site was performed in one phase as a single project, and no interim remedial measures, operable units or separate construction contracts were performed.

4.0 DESCRIPTION OF REMEDIAL ACTIONS PERFORMED

4.1 GOVERNING DOCUMENTS

4.1.1 SITE SPECIFIC HEALTH & SAFETY PLAN (HASP)

The Health and Safety Plan for the implementation of remedial actions at the 555 Grand Street Site was included as an attachment (D) of the Remedial Action Work Plan (RAWP) approved by the NYSDEC.

All remedial work performed under this Remedial Action was in full compliance with governmental requirements, including Site and worker safety requirements mandated by Federal OSHA. The Health and Safety Plan (HASP) was complied with for all remedial and invasive work performed at the Site.

4.1.2 QUALITY ASSURANCE PROJECT PLAN (QAPP)

The QAPP was included as an attachment (D) of the Remedial Action Work Plan (RAWP) approved by the NYSDEC. The QAPP describes the specific policies, objectives, organization, functional activities and quality assurance/ quality control activities designed to achieve the project data quality objectives.

4.1.3 CONSTRUCTION QUALITY ASSURANCE PLAN (CQAP)

The Construction Quality Assurance Plan(s) (CQAPs) managed performance of the Remedial Action tasks through designed and documented QA/QC methodologies applied in the field and in the lab. The CQAP provided a detailed description of the observation and testing activities that were used to monitor construction quality and confirm that remedial construction was in conformance with the remediation objectives and specifications.

The following organizations and key personnel were involved in the implementation of the remedy:

Name	Title	Organization	Responsibilities
Sam Polatsek	Construction Manager	Sunshine Construction	Scheduling and oversight of subcontractors and for implementation of the construction program. Also installed the SSDS system.
Charles Sosik, P.G. Chawinie Reilly	Principal / Environmental Project Manager	EBC	Coordination and oversight of day to day field activities, soil disposal, materials importation and UST removal.
Kevin Waters, Thomas Gallo, Derrick Merker, Anthony Balado, Dexter Carter, Eleni Kavvadias, Patrick Recio, Samuel Teka, Emily Efstration, Jeremy Rosenberg, Brett Roberts, David Rukki, Sean Igoe, Hong Pong Lau	Field Manager/EP / SSO	EBC	On-Site soil screening, health and safety oversight and air monitoring. Preparation of daily and monthly status reports and updates to the RE.
Ariel Czemerinski P.E.	Remedial Engineer	AMC Engineering, PLLC	Overall responsibility for implementation of the remedial plan and designing the SSD system.

All intrusive and soil disturbance activities were monitored by an Environmental Professional (EP) who recorded observations in the Site field book and kept a photographic log of the daily activities. The EP provided daily updates to the Environmental Project Manager and Remedial Engineer (RE) who both made periodic visits to the Site as needed to assure construction quality.

Soil samples were collected by the EP who was on-Site daily during all soil disturbance activities. Sample collection, analysis and frequency were made in accordance with the requirements of the disposal facility: Bayshore Soil Management (Bayshore). Corrective measures, if required, were to be made in direct consultation with the representative of the selected disposal facility. Project coordination meetings were generally held in the on-Site construction trailer on a weekly basis and supplemented as conditions required. Meeting

attendees over the course of the project varied according to need and may have included the following personnel:

- Construction Manager
- EP/SSO
- Site Foreman / Supervisor
- Architect of Record
- Structural Engineer
- Environmental Project Manager
- Environmental Project Director
- Remedial Engineer

Daily status reports were prepared by the Environmental Project Manager in consultation with the EP and distributed to the project contact list via email. Copies of waste manifests, chain of custody documentation and air monitoring reports were placed in appropriately labeled binders which were kept in the GC's office. Photographic documentation was performed on a daily basis and periodically uploaded to the digital project file at the EBC office.

4.1.4 SOIL/MATERIALS MANAGEMENT PLAN (S/MMP)

A Soil/Materials Management Plan (S/MMP) was included in the RAWP for excavation, handling, storage, transport and disposal of all soils/materials that were disturbed at the Site. The S/MMP provided detailed plans for managing all soils/materials that were disturbed at the Site, including excavation, handling, storage, transport and disposal. It also 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 specified the following methods to meet the performance objectives:

- Soil Screening Methods – Visual, olfactory and PID soil screening and assessment was performed by an EP during all remedial and development excavations into known or potentially contaminated material (Residual Contamination Zone);
- Stockpile Methods – Stockpiles were kept covered at all times with appropriately anchored tarps and inspected daily to ensure the covers are maintained and fugitive dust

emissions do not occur. In-situ waste characterization soil samples were collected prior to excavation and stockpiling;

- Materials Excavation and Load Out - The EP under the supervision of the RE was on-Site on a daily basis to oversee all invasive work and the excavation and load-out of all excavated material. Vehicles did not enter the site, as all materials were excavated by hand and placed into a roll-off container on the street. The adjacent streets were inspected and cleaned as needed with respect to Site-derived materials;
- Materials Transport Off-Site – All transport of materials was performed by licensed haulers in accordance with appropriate local, State, and Federal regulations. Truck transport routes were determined prior to construction and a map of the route was posted at the egress points of the Site. All trucks picking up roll-off containers from the Site exited the Site using the approved truck routes. The identified route was selected to limit transport through residential areas and past sensitive sites and comply with City-mapped truck routes;
- Materials Disposal Off-Site – All excavated historic fill was treated as a contaminated and regulated material and was disposed in accordance with all local, State and Federal regulations. Non-hazardous waste manifests were used to track and document the off-Site movement of the roll-off containers containing non-hazardous soils. Waste characterization was performed for off-Site disposal in accordance with the requirements of the receiving facility and in conformance with applicable permits. Waste characterization data was provided to the receiving facility and approved in writing by the facility prior to off-Site shipment. A summary of off-Site disposal is provided in **Table 2**. A summary of waste characterization sampling is provided in **Table 3**, with summaries of waste characterization results provided in **Tables 4 to Table 9.** Waste disposal manifests are provided in **Attachment J**;
- Fluids Management - Construction wastewater generated from surface runoff was minimized and directed back toward the interior of the Site and the excavation;
- Backfill from Off-Site Sources – ¾ inch Recycled Concrete Aggregate (RCA) was imported to the Site from NYC Concrete Materials; a NYSDEC Active/Registered Construction and Demolition Debris Processing Facility for a 12 inch layer under the slab. In addition, 1 ½ inch and ¾ inch gravel was import from Liberty Stone and

Aggregates; Clinton Quarry; a quarry (Mine Registration Certificate number 004581) for use as a 1.5 foot cover in the rear yard. No other off-Site sources of backfill were utilized for on-Site use;

- After the completion of soil removal and other invasive remedial activities and prior to backfilling, a land survey was performed by a New York State licensed surveyor. See **Attachment Q**;
- Contingency Plan – The contingency plan specified procedures to document and notifies the NYSDEC in the event that underground tanks or other previously unidentified contaminant sources were found during on-Site remedial excavation or development related construction. One 1,000-gallon waste water UST with five internal compartments was removed from the Site. Tank removal documentation can be found in **Attachment K**;
- Community Air Monitoring – The S/MMP specified air monitoring during implementation of each component of the Remedial Action to provide a measure of protection for the downwind community from potential airborne contaminant releases as a direct result of investigative or remedial work activities. As described in **Section 4.1.6**, the project EP performed daily monitoring around the perimeter of the property for volatile organic compounds and dust particulates. No exceedances in CAMP action levels were recorded during the remedial action as shown in the. CAMP logs present in **Attachment C**; and
- Odor, Dust and Nuisance Control – Dust control was accomplished by spraying water on exposed soil surfaces to ensure that perimeter action levels established in the CAMP were not exceeded. Continuous air monitoring revealed that there were no instances when the onsite VOCs levels exceeded the CAMP action levels.

4.1.5 STORM-WATER POLLUTION PREVENTION PLAN (SWPPP)

This document addressed requirements of New York State Storm-Water Management Regulations including physical methods to control and/or divert surface water flows and to limit the potential for erosion and migration of Site soils, via wind or water.

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 and the site-specific Storm Water Pollution Prevention Plan.

Typical measures that were utilized at various stages of the project to limit the potential for erosion and migration of soil included the use of temporary stabilized construction entrances/exits and dust control measures. In this case, all storm water was retained on Site and directed toward the interior of the Site and allowed to percolate into the ground.

4.1.6 COMMUNITY AIR MONITORING PLAN (CAMP)

The Community Air Monitoring Plan (CAMP) provided measures for the protection of the surrounding and downwind community (i.e., off-Site receptors including residences, businesses, and on-Site workers not directly involved in the remedial work) from potential airborne contaminant releases resulting from remedial activities. The action levels specified required increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that the remedial work did not spread contamination off-Site through the air. The primary concerns for this Site were VOC vapors, nuisance odors and dust particulates.

To comply with the requirements of the CAMP, the EP performed daily monitoring around the perimeter of the property for volatile organic compounds and dust particulates. Instruments used for CAMP monitoring included one MiniRAE 2000 photoionization detector (PID) and one MIE pDR-1000 data ram dust meter. No exceedances in CAMP action levels were recorded during the remedial action, Daily CAMP monitoring data sheets are included in **Attachment C**.

4.1.7 SITE OPERATIONS PLAN (SOP)

The Remedial Engineer reviewed all 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 NYSDOH in a timely manner and prior to the start of work.

4.1.8 CITIZEN PARTICIPATION PLAN (CPP)

The approved Citizen Participation Plan for this project specified the following document repositories for all applicable project documents for the duration of the project:

Brooklyn Public Library
Leonard Street Branch
81 Devoe Street
Brooklyn, NY 11211
(718) 486-3365

NYSDEC Region 2 Office
Hunter's Point Plaza
47-40 21st Street
Long Island City, NY 11101
(718) 482-4900

Fact sheets notifying the public of project milestones and of the availability of documents for review and comment were sent to the site contact list in accordance with the Citizen Participation requirements of the NYS Brownfield Cleanup Program.

Remaining citizen participation elements will include the distribution of a fact sheet to the site contact list when the Certificate of Completion (COC) is issued.

4.2 REMEDIAL PROGRAM ELEMENTS

4.2.1 CONTRACTORS AND CONSULTANTS

- Sunshine Construction
    - General Contractor for the Site
    - Performed all excavation work
    - Supervise, schedule and coordinate subcontractors
    - Project Budgeting
    - Installed SSDS system
- A B Environmental
    - Tank Removal
    - Removal of fluids within tanks
- C Squared Environmental Corporation
    - Drilling Services for the Remedial Investigation
- LVS Inc.
    - Drilling Services for the Remedial Investigation
- Environmental Business Consultants
    - Environmental Consultant
    - Qualified Environmental Professional
    - Perform Health and Safety and CAMP Monitoring
    - Perform Soil Screening and Waste Characterization Sampling
    - Document Remedial Program
    - Reporting (Daily, Monthly)
- AMC Engineering, PLLC
    - Remedial Engineer
    - Perform Periodic Inspections of Work / Methods
    - Certify Compliance with RAWP and Associated Plans
    - Design, inspect, and certify the SSDS system
    - Design, inspect, and certify the cover system
    - Certify Compliance with FER and Associated Plans

4.2.2 SITE PREPARATION

The Remedial Action Work Plan was formally approved by the NYSDEC by letter dated April 23, 2015. Documentation of NYSDEC approvals is included in **Attachment D**. Other non-agency permits relating to the remediation project are provided in **Attachment E**. The following permits were issued for this project.

Attachment E IDs	*Permit*	*Permit Number*	*Originating Agency*	*Issued*	*Expires*
1	Demolition	321208064-01-EW-OT	NYCDOB	12/18/2015	12/10/2016
2	Sprinklers	3PL007760-02-EW-SP	NYCDOB	09/10/2018	09/10/2019
3	Plumbing	320760725-01-PL	NYCDOB	09/21/2018	09/21/2019
4	Scaffolding	340317598-01-EQ-SF	NYCDOB	10/12/2018	10/12/2019
5	Shed Installation	340316713-01-EQ-SH	NYCDOB	10/12/2018	10/12/2019
6	Fence	320760725-01-EQ-FN	NYCDOB	10/29/2018	10/29/2019
7	Alteration	320760725-01-AL	NYCDOB	05/01/2019	05/26/2020

All SEQRA/CEQR requirements and all substantive compliance requirements for attainment of applicable permits were achieved during this Remedial Action.

Site preparation began with excavating and capping the sewer lines and water lines in the sidewalks adjacent to the property and erection of a construction fence in preparation for demolition work. Demolition of the building on the Site was completed in June 22, 2017. This effort was followed by soil sampling for waste characterization and disposal facility acceptance on May 30, 2017 and May 31, 2018. A preconstruction conference call was held on April 15, 2015 which included the RE, Environmental Project Manager and Field Manager, Construction Manager, GC, excavation contractor and the DEC.

Mobilization for remedial work started in December 21, 2015, including the delivery of heavy equipment and jobsite tools. A new NYSDEC-approved project sign was erected at the project entrance and remained in place during all phases of the Remedial Action. Excavation was largely completed between December 21, 2015 and October 17, 2018.

4.2.3 GENERAL SITE CONTROLS

Security of the Site was maintained by a construction fence erected around the perimeter of the Site with a gate at the site entrance/egress point, which was locked at the end of each work day. Job Site record keeping included a daily sign-in sheet, daily air monitoring logs, waste manifests,

accident reports, field notes and photographic documentation. All project forms, logs and receipts were filed on-Site, in dedicated binders kept in the construction trailer. Field notes and observations were recorded in a project-dedicated field book which remained in the construction trailer. Photographic documentation was up-loaded on a daily basis to a laptop computer which remained in the possession of the EP.

A silt fence and a truck pad were not used for this site since all work was conducted in the cellar and all soil was moved out by hand.

Soil screening was performed by the project EP during excavation of all on-Site soil during waste characterization sampling and/or disposal at the Bayshore facility. Soil stockpiles were covered with appropriately anchored tarps until waste characterization results were obtained (if in-situ sampling was not already performed), disposal facility arrangements were made and soil load out occurred. Soil stockpile covers were inspected daily and after each storm event.

4.2.4 ODOR, DUST AND NUISANCE CONTROL PLAN

The S/MMP specified that dust would be controlled by wetting the work area. Dust generation was minimal during most excavation work, and water was sprayed in the areas of work as needed based on the CAMP readings.

Nuisance odors, primarily related to temporarily stockpiled soils and loading operations, were minimized by covering stockpiled soils when such piles remained overnight or longer.

The selected truck route minimized traffic on neighborhood streets, and followed the NYCDOT-approved truck routes. The truck route map was enlarged and mounted at the Site access gate to notify all drivers.

4.2.5 COMMUNITY AIR MONITORING PLAN (CAMP) RESULTS

Air monitoring was performed on a daily basis at the site boundaries for dust and VOCs in accordance with the Community Air Monitoring Plan (CAMP). There were no exceedances of the CAMP action levels reported during the excavation of soils.

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

4.2.6 REPORTING

In accordance with the approved RAWP, daily status reports were prepared and submitted to the NYSDEC and the project team. Daily reports included a listing of contractors, personnel and equipment on-Site, description of activities performed by contractors, CAMP monitoring results, materials imported/exported to/from the Site and planned activities for the following day.

Monthly project status reports were prepared by the EBC Project Manager and distributed to the NYSDEC and project team. Monthly reports included a summary of the activities performed during the month and those anticipated during the next month, a summary of materials transported on/off the Site during the month, sampling results and delays in the schedule.

All daily and monthly reports are included in electronic format in **Attachment F**. The digital photo log required by the RAWP is included in electronic format in **Attachment G**.

4.3 MATERIALS REMOVAL

Materials removed from the Site during the remediation project included concrete and brick from the slab, footings and structures associated with the former Site building, one 1,000-gallon waste water UST with five compartments, and non-hazardous historic fill (aka Urban Fill by Bayshore).

The approved Track 4 cleanup included remediation of all soil to Restricted Residential Use SCOs. The implemented remedy included the following:

- Removal of one 1,000-gallon waste water underground storage tank (UST) with five compartments;
- Excavation of all soil/fill exceeding Track 4 SCOs listed in **Table 1** to a depth of 10 feet below grade for a majority of the building foot print and to 11.25 feet below grade for three areas on the south side of the site due to boulders; which exceeds restricted residential soil cleanup objectives;
- Screening for indications of contamination (by visual means, odor, and monitoring with PID) of all excavated soil during any intrusive Site work;

- Collection and analysis of end-point samples from the base and sidewalls of USTs excavation;
- Collection and analysis of end-point samples from the new cellar area to evaluate the performance of the remedy with respect to attainment of Track 4 SCOs;
- Appropriate off-Site disposal of all material removed from the Site in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal;
- Import of materials for use as backfill and cover in compliance with: (1) chemical limits and other specifications included in **Table 1**, (2) all Federal, State and local rules and regulations for handling and transport of material;
- Installation of a Sub Slab Depressurization system beneath the building;
- Implementation of a Site Management Plan (SMP) to ensure maintenance of the Engineering Controls; and
- Recording of an Environmental Easement against the Site to ensure implementation of the SMP.

A list of the Track 4 soil cleanup objectives (SCOs) and groundwater protection for the contaminants of concern for this project is provided in **Table 1**. A figure with the locations of original sources and areas of excavation is shown in **Figure 3**.

Excavation and off-Site disposal of historic fill present across the Site from grade to approximately 10 feet below grade for a majority of the cellar foot print and to 11.25 feet below grade for three areas on the south side of the site due to boulders was completed in October 2018. During excavation, a total of one (1) 1,000-gallon waste water UST with five compartments was removed on May 3, 2018.

4.3.1 TEST PITS AND WASTE CHARACTERIZATION SAMPLING

Petroleum Contaminated Soils / Urban Fill / Historic Fill

On April 22, 2015, EBC mobilized onsite to obtain waste characterization samples from onsite excavated test pits. Waste characterization samples are required by soil disposal facilities to obtain soil disposal approval. From five (5) test pits, EBC obtained five (5) grab samples (1 from each test pit). One 5-pt composite and one grab sample representative of the material were submitted to the laboratory for analysis.

Soil samples collected for waste characterization were placed in pre-cleaned laboratory supplied glassware and Encore samplers, and placed in a cooler packed with ice for transport to the laboratory. Analysis of the waster characterization samples was provided by Phoenix Environmental Laboratories (Phoenix) of 587 East Middle Turnpike, Manchester, CT 06040, a New York State ELAP certified environmental laboratory (ELAP Certification No. 11301). The grab sample was submitted for laboratory analysis of VOCs via EPA Method 8260. The composite soil sample was submitted for laboratory analysis of the following:

Analysis	**Method**	**Frequency**
Semi-Volatile Organic Compounds (SVOCs)	EPA Method 8270	1 every 800 yd^3
Herbicides/PCBs/Pesticides	EPA Method 8082/8081	1 every 800 yd^3
TCLP Metals	EPA Method 1311	1 every 800 yd^3
Target Analyte Metals	EPA Method 6010	1 every 800 yd^3
RCRA Characteristics		1 every 800 yd^3
TPH DRO/GRO to C44	EPA Method 8015	1 every 800 yd^3
Paint Filter	EPA Method 9095	1 every 800 yd^3

On May 23, 2018, EBC remobilized to obtain additional waste characterization samples from excavated test pits. This sampling event was performed since the April 2015 sampling event was deemed too old by the facility, and not an accurate representation of materials onsite. Waste characterization samples were obtained from five (5) test pits, and one 5-pt composite and one grab sample were submitted to the laboratory for analysis. Samples were collected and handled as described during the April 2015 sampling event, and submitted to Phoenix. The grab sample was submitted for laboratory analysis of VOCs via EPA Method 8260. The composite soil sample was submitted for laboratory analysis of the following:

Analysis	**Method**	**Frequency**
Semi-Volatile Organic Compounds (SVOCs)	EPA Method 8270	1 every 800 yd^3
Herbicides/PCBs/Pesticides	EPA Method 8082/8081	1 every 800 yd^3
TCLP Metals	EPA Method 1311	1 every 800 yd^3
Target Analyte Metals + Cr (VI)	EPA Method 6010	1 every 800 yd^3
RCRA Characteristics		1 every 800 yd^3

EPH Category II	EPA Method 8015	1 every 800 yd^3
Paint Filter	EPA Method 9095	1 every 800 yd^3

Based on the laboratory results of the waste characterization soil samples, Bayshore Soil Management, LLC (Bayshore) accepted the materials for disposal at their facility under the classification of "Petroleum Contaminated Soils / Urban Fill", which was used to denote the historic fill found at the Site. A copy of the formal soil disposal request letter prepared by EBC, and a copy of the formal soil disposal acceptance letter prepared by Bayshore are attached in **Attachment J**. Laboratory results of the waste characterization soil samples are included in **Attachment I**.

4.3.2 EXCAVATION AND DISPOSAL OF HISTORIC FILL

EBC personnel characterized historic fill as soil that contained materials such as brick, concrete, glass or ceramics, cinder, etc. At this site, historic fill material had been identified across the Site to the bottom of excavation. All historic fill was removed from the Site in accordance to the procedures outlined under the approved Remedial Action Work Plan dated April 23, 2014. Excavation of historic fill for construction of the new building started in December 21, 2015 and was largely completed by October 17, 2018. Soil excavation was performed by hand: soils were loaded up in a wheelbarrow, which was pushed outside. Soils from the wheelbarrow were loaded up into a roll-off container, which was picked up by the waste hauler when filled up.

Disposal Details – Historic Fill to Bayshore

All non-hazardous historic fill/soil excavated from the site was shipped to the Bayshore facility. All materials were stored in roll-off containers, which were picked up by NYSDEC Part 364 Waste Transporter Permitted trucks dispatched by Bayshore Soil Management, LLC. A total of 648.38 tons of non-hazardous fill material was transported to Bayshore**.** Non-hazardous disposal manifests for the facility are provided as a digital file in **Attachment J.** A summary of the waste streams and their destination is provided in **Table 2**.

4.3.3 UNDERGROUND STORAGE TANK REMOVAL

During Site excavation for the new building's cellar, one (1) 1,000-gallon steel waste water UST with five compartments was removed from the north portion of the Site. The tank was removed from the Site between April 30, 2018 to May 3, 2018. The tank location is shown on **Figure 4**.

Between April 30, 2018 to May 3, 2018 approximately 346 gallons of non-hazardous, non DOT, non RCRA, non regulated liquids and 1,200 pounds of non-hazardous, non DOT, non RCRA, non regulated solids within the tanks were removed by Able Environmental Service to AB Oil Service LTD located at 1599 Ocean Avenue Bohemia, New York 11716. A copy of the disposal receipt is included in **Attachment K**. The tank was then cut and cleaned, and disposed at B Oil Service LTD located at 1599 Ocean Avenue Bohemia, New York 11716. Sidewall and bottom samples (TB1, TB2, TB3, TB4, SW1, SW2, SW3 and SW4) were collected and analyzed for VOCs and SVOCs (CP51 list). Laboratory results are included in **Attachment M** and within **Table 16** and **Table 17**.

A NYSDEC PBS Application was submitted to the NYSDEC to deregister the 1,000-gallon waste water UST with five compartments. A copy of the PBS application, manifests and NYFD tank removal affidavit is included in **Attachment K**. Based on discussion with the PBS department; the tank does not need to be registered since it is waste water.

4.3.4 CONSTRUCTION AND DEMOLITION DEBRIS REMOVAL

Construction and demolition debris (C&D) consisting of concrete slabs from the Site's former building were encountered during Site excavation. Large pieces of concrete were segregated from historic fill, broken into pieces small enough to load in a truck, and stockpiled to await off-Site disposal. These piles of concrete were screened with a PID numerous times and were never noted to be about 0.0 ppm. No concrete removed from the ground at the Site exhibited visual or olfactory evidence of contamination (odor, staining, discoloration, excessive paint) and was considered clean concrete.

Two truckloads of C&D were transported to Cooper Tank and Welding Corp, which is a Construction and Demolition Debris Processing Facility located at 222 Maspeth Avenue Brooklyn NY; registered with 360 Permit number 261010006100001 to accept uncontaminated concrete.

A copy of a print out from the NYSDEC website of Class B of permitted construction and demolition debris processing facilities listing the above facilities as Active/Registered is included in **Appendix H**. Ownership was not able to obtain manifests and this is discussed in Section 4.9 as a deviation to the approved Remedial Action Work Plan.

4.3.5 RCA AND GRAVEL IMPORT AND REMOVAL

No truck pad was utilized at the site; excavation was conducted by hand and soil was moved the disposal container via wheel barrel. Approximately 4 truckloads (70 cubic yards) of recycled concrete aggregate (RCA) were delivered to the site for use as a 12" layer under the slab. The material was imported from NYC Concrete Materials Pebble Lane Associates located at 57-00 47th Street Queens NY 11378; a NYSDEC Active/Registered Construction and Demolition Debris Processing Facility. DEC approved this import on September 6, 2018. In addition, 1 ½ inch and ¾ inch gravel was import from Liberty Stone and Aggregates; Clinton Quarry located at 5 Route 173 Union Township, New Jersey; a quarry (Mine Registration Certificate number 004581) for use as a 1.5 foot cover in the rear yard. DEC approved this import on September 16, 2019.

A copy of a print out from the NYSDEC website of permitted construction and demolition debris processing facilities listing the facilities as Active/Registered is included in **Attachment H**. A truck ticket for each of the loads of stone is attached in **Attachment O**.

4.3.6 DISPOSAL SUMMARY

The table provided below shows the total quantities of each category of material removed from the Site and the disposal location.

Off-Site Disposal Summary

Disposal Facility	Historic Fill (Tons)
Bayshore Soil Management, LLC	648.38

4.4 REMEDIAL PERFORMANCE SAMPLING

4.4.1 SITE-WIDE ENDPOINT SAMPLING

In accordance with the frequency outlined within the RAWP, EBC collected endpoint verification soil samples from the site to verify that remedial goals had been achieved. The endpoint soil samples were collected from each section at a frequency of one per 900 ft^2. Additionally, six sidewall endpoint samples were obtained as requested by the NYSDEC. All endpoint sample locations can be found on **Figure 4**.

On August 7, 2018, a total of three endpoint soil samples (EP1, EP2, EP3) were collected at 10 feet below grade. Additionally, four sidewall samples (SW1, SW2, SW4, SW5) were obtained at 10 feet below grade. These soil samples were submitted to Phoenix Laboratories for analysis of VOCs and SVOCs according to EPA methods 8260 and 8270, pesticides/PCBs by EPA Method 8081/ 8082 and TAL metals with Category B Deliverables.

On August 17, 2018, a total of two sidewall samples (SW3, SW6) were obtained at 10 feet below grade. These soil samples were submitted to Phoenix Laboratories for analysis of VOCs and SVOCs according to EPA methods 8260 and 8270, pesticides/PCBs by EPA Method 8081/ 8082 and TAL metals with Category B Deliverables.

All endpoint sample results were found below Track 4 SCOs.

A copy of each of the laboratory reports is attached in **Attachment L.** The results are summarized and compared to NYSDEC Part 375.6 Restricted Residential Use SCOs in **Table 10** to **Table 13**. Data Usability Summary Reports (DUSRs) were prepared for all data generated in this remedial performance evaluation program. The DUSRs are included in **Attachment N**.

4.5 IMPORTED MATERIALS FOR BACKFILL

4.5.1 IMPORTED CLEAN SOIL FOR BACKFILL

Approximately 4 truckloads (70 cubic yards) of recycled concrete aggregate (RCA) were delivered to the site for use as a 12" layer under the slab. The material was imported from NYC Concrete Materials Pebble Lane Associates located at 57-00 47th Street Queens NY 11378; a NYSDEC Active/Registered Construction and Demolition Debris Processing Facility. DEC approved this import on September 6, 2018. In addition, 1 ½ inch and ¾ inch gravel was import from Liberty Stone and Aggregates; Clinton Quarry located at 5 Route 173 Union Township, New Jersey; a quarry (Mine Registration Certificate number 004581) for use as a 1.5 foot cover in the rear yard. DEC approved this import on September 16, 2019. Copies of truck tickets the RCA loads are attached in **Attachment O**.

A table of all sources of imported backfill with quantities for each source is provided in the table below.

Source	Material Type	Quantity	Purpose
NYC Concrete Materials Pebble Lane Associates located at 57-00 47th Street Queens NY 11378	RCA	70 cubic yards	12" layer under the slab
Liberty Stone and Aggregates; Clinton Quarry located at 5 Route 173 Union Township, New Jersey	1 ½ inch and ¾ inch gravel	59.04 tons	1.5 foot cover in the rear yard

4.6 CONTAMINATION REMAINING AT THE SITE

The results of endpoint samples collected after excavation was completed confirm that all soil within the upper 15 feet of the Site meets Track 4 Restricted Residential Use SCOs. Remaining parameters in soil above SCOs is presented in **Table 18** and **Figure 4**.

4.7 ENGINEERING CONTROLS

Since remaining contaminated soil exists beneath the site, short term Engineering Controls (EC) are required to protect human health and the environment. The site has the following primary Engineering Controls, as described in the following subsections:

- Site Cover System
- Sub-Slab Depressurization System (SSDS)

4.7.1 Sub-Slab Depressurization System (SSDS)

Soil gas testing performed under the RI, identified elevated concentrations of CVOCs in soil gas beneath the entire slab, however, the highest concentrations were located in the front (south) of the building. The high concentrations reported in this area of the property indicated the presence of a contaminant source in this area. The elevated CVOCs in soil gas was likely related to isolated and shallow areas of CVOC contaminated soil. The approved RAWP and approved SVE Design Document note installation of a Soil Vapor Extraction (SVE) system beneath the existing foundation. It should be noted that due to the change in excavation plans for the Site, the SVE system was not installed and a Sub Slab Depressurization System (SSDS) was installed instead. This system is further discussed below.

SSD System Design and Installation

The SSD system beneath the building slab consists of six venting zones. These zones provide coverage of approximately 1,800 sf of slab area. This is consistent with USEPA SSD design specifications, which recommend a separate vent loop for every 4,000 sf of slab area.

The horizontal vent lines are constructed with a central line of solid 4-inch PVC pipe, which runs north to south on Site, three horizontal vent line legs of 4 inch PVC 10-slot well screen on the east side of the Site and three horizontal vent line legs of 4 inch PVC 10-slot well screen on the west side of the Site. Ball valves and 4x4 tees or four-way connections join the horizontal vent line legs to the solid central line. A manhole cover was placed over the ball valve connection points and the ball valves were used to balance the system. The SSDS lines were installed in a 6 inch layer of filter sand, topped with a 1' of ¾ inch RCA and below the vapor barrier. The 4 inch PVC lines connect to a 2-inch schedule 40 PVC pipe which connects to a 1.5 hp Regenerative Blower manufactured by Rotron. A 2-inch schedule 40 PVC pipe connects the 1.5 hp Regenerative Blower to the SSDS discharge line which consists of a solid 2 inch PVC riser pipe that extends to the roof. It should be noted that the decision document states that extracted air treatment air is required. Based on the change of excavation and removal of source; extracted air treatment was not installed for the system. A sample of exhaust was collected as per the DEC

request on September 5, 2019. One 8-hr TO15 sample was collected and analyzed. Total VOCs were noted at 172.67 µg/m3, PCE was noted at 13.7 µg/m3, TCE was noted at 0.75 µg/m3, carbon tetrachloride was noted at 0.46 µg/m3 and 1,1,1-trichloroethane was non detect. A second exhaust sample was collected the week of October 7th 2019. One 8-hr TO15 sample was collected and analyzed. Total VOCs were noted at 352.38 µg/m3, PCE was noted at 3.46 µg/m3, carbon tetrachloride was noted at 0.41 µg/m3 and TCE and 1,1,1-trichloroethane was non detect. The system is hardwired to an electric source. The exhaust from the blower is located a minimum of 10 feet from windows and ventilation inlets. The SSD system utilizes a manometer (Dwyer, 0-60 inches of water manometer) and an alarm (Radonaway alarm) installed on the cellar floor of the building to ensure proper operation of the blower. An as-built drawing of the SSDS is provided as **Figure 7** and a SSDS detail is included in **Figure 8**. Documentation regarding the SSDS can be found in **Attachment P.** Results of the SSDS effluent sampling are presented in **Table 19** and laboratory results are included in **Attachment P**.

The SSDS will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data indicates that the SSD system may no longer be required, a proposal to discontinue the SSD system will be submitted by the remedial party to the NYSDEC and NYSDOH.

System Startup and Testing

On June 27, 2019, AMC conducted a start-up / communications test. Sub slab monitoring points were checked for vacuum. The system alarm was tested and verified to be working. The SSDS loops are under vacuum and all components were installed and operating as designed. The riser and blower were inspected and are operating as designed.

A sample of exhaust was collected as per the DEC request on September 5, 2019. One 8-hr TO15 sample was collated and analyzed. Total VOCs were noted at 172.67 µg/m3, PCE was noted at 13.7 µg/m3, TCE was noted at 0.75 µg/m3, carbon tetrachloride was noted at 0.46 µg/m3 and 1,1,1,-trichloroethane was non detect. A second exhaust sample was collected the week of October 7th 2019. One 8-hr TO15 sample was collected and analyzed. Total VOCs were noted at 352.38 µg/m3, PCE was noted at 3.46 µg/m3, carbon tetrachloride was noted at 0.41 µg/m3 and TCE and 1,1,1-trichloroethane was non detect.

Prior to allowing occupancy for the building, DEC requested that indoor air sampling be conducted at the Site. An Indoor Air Sampling work plan dated April 18, 2019 submitted to DEC. A copy of this work plan is included in **Attachment P**. On July 23, 2019, DEC confirmed that the indoor air sampling could be conducted after operating the SSDS system for 30 days and after August 2, 2019. As per the work plan; three 24-hours samples were collected (two indoor air and one outdoor air samples; IA1, IA2 and OA1) and pressure readings across the slab area were also collected to confirm vacuum.

Analysis of the indoor air samples noted low levels of BTEX; ranging from 10.42 µg/m^3 to 11.93 µg/m^3 and TCE was not detected in any of the samples. PCE was detected in both indoor air samples and ranged from 1.29 µg/m^3 to 1.84 µg/m^3. Carbon tetrachloride was detected in each of the indoor air samples and ranged from 0.46 µg/m^3 to 0.55 µg/m^3. 1,1,1-Trichloroethane was not detected in any sample. Total VOCs in the indoor air samples ranged from 182.65 µg/m^3 to 218.20 µg/m^3.

Analysis of the outdoor air sample noted BTEX at 1.31 µg/m^3, TCE and 1,1,1-Trichloroethane were non detect. Carbon Tetrachloride was detected at 0.52 µg/m^3 and PCE was detected at 0.50 µg/m^3.

Results of the SSDS effluent sampling are presented in **Table 19** and results from the indoor air sampling are provided in **Table 19.** The indoor air sampling report and AMCs inspection report is included in **Attachment P.** Laboratory reports for these results can be found in **Attachment P**.

<u>System Operation and Maintenance</u>

Procedures for monitoring, operating and maintaining the SSDS are provided in the Operation and Maintenance Plan in Section 5 and Attachment F of the Site Management Plan (SMP). The Monitoring Plan also addresses inspection procedures that must occur after any severe weather condition has taken place that may affect on-site ECs.

4.7.2 Site Cover System

As part of the Track 4 Cleanup, a composite cover was installed across the entire site. The cover system under the building area consists of a Soprema waterproofing underlain by a 20-mil vapor

barrier and 6" concrete slab. The cover system under the rear yard consists of pavers, underlain by 1.5' of ¾" gravel, underlain by a demarcation barrier, underlain by 6" gravel. Additional details regarding the site cover system can be found in **Figure 9**.

4.8 INSTITUTIONAL CONTROLS

The Site remedy requires that an environmental easement be placed on the property to (1) implement, maintain and monitor the Engineering Controls; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the site to residential, restricted residential, commercial or industrial uses only.

The environmental easement for the Site was executed by the Department on September 29, 2016, and filed with the Kings County Office of the City Register on October 18, 2016. The County Recording Identifier number for this filing is 2016092800985001. A copy of the easement and proof of filing is provided in **Attachment B**.

4.9 DEVIATIONS FROM THE REMEDIAL ACTION WORK PLAN

Several deviations from the originally approved Remedial Action Work Plan (RAWP) are as follows:

- A stop work order was received for the site on December 24, 2015 and was removed on September 5, 2016;
- The depth of excavation throughout the site:
    - A majority of the cellar footprint was excavated to depth of 10 feet below grade;
    - Three areas on the south side of the Site were excavated to 11.25 feet below grade due to presence of boulders;
- Based on conversations with the owner, NYSDEC, and other parties involved, the previously proposed SVE system was instead converted to a SSDS. The SVE system was originally proposed since minimal excavation activities was expected. Since the scope of work has changed, the site was able to properly install a SSDS instead.
- Approximately 4 truckloads (70 cubic yards) of recycled concrete aggregate (RCA) were delivered to the site for use as a 12" layer under the slab. The material was imported from NYC Concrete Materials Pebble Lane Associates located at 57-00 47th Street Queens NY

11378; a NYSDEC Active/Registered Construction and Demolition Debris Processing Facility. DEC approved this import on September 6, 2018. Ownership was not able to obtain copies of these manifests.

- Ownership was not able to obtain copies of the manifests for C & D sent to Copper Tank and Welding Corp is a Construction and Demolition Debris Processing Facility located at 222 Maspeth Avenue Brooklyn NY; registered with 360 Permit number 261010006100001 to accept uncontaminated concrete.

- The composite cover in the rear yard consists of pavers, underlain by 1.5 feet of 1 ½ inch and ¾ inch gravel, underlain by a demarcation barrier, underlain by 6" of ¾ inch gravel, and finally underlain by residual soil. Details can be found in "Detail A" of **Figure 9**.
- Soprema waterproofing was applied on top of the 20-mil vapor barrier. Details can be found in "Detail A" of **Figure 9**.