NYC Mayor's Office of Environmental Remediation

NYC Brownfield Cleanup Program

Remedial Action Report

BRIGHTON GREEN

BROOKLYN, NEW YORK

Remedial Action Report

NYC BCP Number: 12CBCP018K

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REMEDIAL ACTION REPORT

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LIST OF ACRONYMS

Acronym	Definition
CAMP	Community Air Monitoring Plan
DER-10	NYS DEC Division of Environmental Remediation Technical Guidance Manual 10
EC	Engineering Control
HASP	Health and Safety Plan
IC	Institutional Control
NYC BCP	New York City Brownfield Cleanup Program
NYC DEP	New York City Department of Environmental Protection
NYC DOHMH	New York City Department of Health and Mental Hygiene
NYC OER	New York City Office of Environmental Remediation
ORC	Oxygen Release Compound
PID	Photoionization Detector
QA/QC	Quality Assurance/Quality Control
QEP	Qualified Environmental Professional
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan
SCG	Standards, Criteria and Guidance
SCO	Soil Cleanup Objective
SMMP	Soil/Materials Management Plan
SMP	Site Management Plan
SVOCs	Semi-Volatile Organic Compounds
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds

CERTIFICATION

I, RICHARD GALLI *, am currently a registered professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the Brighton Green Site 12CBCP018K. I,* RICHARD GALLI *, am a qualified Environmental Professional. I had primary direct responsibility for implementation remedial program for the Brighton Green Site 12CBCP018K.*

I certify that the OER-approved Remedial Action Work Plan dated August 15, 2011 and Stipulations in a letter dated September 2, 2011 were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

RICHARD D. GALLI
Name

59461
PE License Number

Richard D Galli
Signature

3-29-12
Date

PE Stamp

Scott A. Yanuck
QEP Name

Scott A Yanuck
QEP Signature

3-28-12
Date

EXECUTIVE SUMMARY

Scarano Realty, LLC enrolled in the New York City Brownfield Cleanup Program (NYC BCP) to investigate and remediate a property located at 67 Brighton 1st Lane in Brighton Beach section of Brooklyn, New York. A Remedial Investigation (RI) was performed in July 2011 to compile and evaluate data and information necessary to develop a Remedial Action Work Plan (RAWP). A remedial action was performed pursuant to an OER-approved RAWP in a manner that has rendered the Site protective of public health and the environment consistent with the proposed use of the property. This RAR describes the remedial action performed under the RAWP. The remedial action described in this document provides for the protection of public health and the environment, complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

Site Location

The Site is located at 67 Brighton 1 Lane in the Brighton Beach section in Brooklyn, New York and is identified as Block 8670 and Lot 80 on the New York City Tax Map. Figure 2 shows the Site location. Prior to remedial action, the Site was vacant and undeveloped, with evidence of construction debris mixed in soils at the site.

Summary of the Redevelopment Plan

The redevelopment plan for the Site consists of a high performance six-story, six-family residential building with an entrance lobby, community facility office, bicycle storage and utilities on the first floor, apartments on Floors 2 – 6 with a communal roof terrace. The building has 5,800 square feet of residential space and 1,200 square feet of community facility office. Layout of the site development is presented in Figure 3. The building covers the entire lot and is constructed to attain LEED Platinum Status. Storage tanks for geothermal heat, gray water and drainage is below the highly insulated slab of the building. Estimated maximum excavation depth for construction is 6 feet under the elevator and 3 feet under the remainder of the building. Groundwater was encountered at 6.5 feet below grade, so excavation into the water table was not expected. The current

zoning designation is R6 residential. The use is consistent with existing zoning for the property.

Summary of Past Uses of Site and Environmental Findings

The Site is rectangular in shape, 2,025-square feet in area, and is bounded by homes to the north, Brighton 1 Lane to the south, a home to the east, and a multi-story building under construction to the west. A map of the site boundary is shown in Appendix A. The property had been on the outer edge of a horseracing track from the late 1800's to the early 1900's. A residential dwelling occupied the site since the development of the lot in the 1920's. The AOCs identified for this site included historic fill and possible heating oil usage at the site.

Summary of the Remedy

The remedial action achieved the remedial objectives established in the RAWP. The remedial action consisted of:

1. Prepared a Community Protection Statement and performed all required NYC BCP citizen participation activities according to an approved Citizen Participation Plan (CPP).
2. Performed a Community Air Monitoring Program for particulates and volatile organic compounds.
3. Established Track 1 Soil Cleanup Objectives (SCOs). Excavated and removed all soil/fill exceeding Track 1SCOs and achieved Track 1 cleanup.
4. End-point samples were collected and analyzed to determine the performance of the remedy with respect to attainment of SCOs.
5. A Cupolex vapor barrier system was installed beneath the entire building slab as part of building construction.
6. Imported materials used for backfill and cover were in compliance with this plan and in accordance with applicable laws and regulations.

7. Transported off-site and disposed all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampled and analyzed excavated media as required by disposal facilities. Maintained appropriate segregation of all excavated media onsite.

8. Screened excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.

9. Managed Site mobilization, including; Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.

10. Implemented storm-water pollution prevention measures in compliance with applicable laws and regulations.

11. Performed all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.

12. Submitted an RAR that describes the remedial activities certifying that the remedial requirements have been achieved, defining the Site boundaries, and describing all Engineering and Institutional Controls implemented at the Site (none were required), and listing any changes from the RAWP.

13. A Site Management Plan to manage residual contamination is not required, as Track 1 objectives were achieved.

REMEDIAL ACTION REPORT

1.0 SITE BACKGROUND

Scarano Realty, LLC has enrolled in the New York City Brownfield Cleanup Program (NYC BCP) to investigate and remediate a property located at 67 Brighton 1st Lane in Brighton Beach section of Brooklyn, New York. A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop a Remedial Action Work Plan (RAWP). A remedial action was performed pursuant to an OER-approved RAWP in a manner that has rendered the Site protective of public health and the environment consistent with the proposed use of the property. This RAR describes the remedial action performed under the RAWP. The remedial action described in this document provides for the protection of public health and the environment, complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

1.1 SITE LOCATION

The Site is located at 67 Brighton 1 Lane in the Brighton Beach section in Brooklyn, New York and is identified as Block 8670 and Lot 80 on the New York City Tax Map. Figure 2 shows the Site location. The Site is 2,025 -square feet in area and is bounded by homes to the north, Brighton 1 Lane to the south, a home to the east, and a multi-story building under construction to the west. A map of the site boundary is shown in Appendix A. Prior to remedial action, the site was vacant and undeveloped, with evidence of construction debris mixed in soils at the site.

1.2 REDEVELOPMENT PLAN

The redevelopment plan for the Site consists of a high performance six-story, six-family residential building with an entrance lobby, community facility office, bicycle storage and utilities on the first floor, apartments on Floors 2 – 6 with a communal roof terrace. The building has 5,800 square feet of residential space and 1,200 square feet of

community facility office. Layout of the site development is presented in Figure 3. The building covers the entire lot and is constructed to attain LEED Platinum Status. Storage tanks for geothermal heat, gray water and drainage is below the highly insulated slab of the building. Estimated maximum excavation depth for construction is 6 feet under the elevator and 3 feet under the remainder of the building. Groundwater was encountered at 6.5 feet below grade, so excavation into the water table was not expected. The current zoning designation is R6 residential. The use is consistent with existing zoning for the property.

1.3 DESCRIPTION OF SURROUNDING PROPERTY

The property lies within a residential neighborhood, with mostly small one and two story single and two-family homes. Commercial buildings are located to the south, primarily along Brighton Beach Avenue. A large condominium building is located on the west side of Brighton 1 Street and there are two buildings currently under construction to the west of the property, which will likely be mixed use. There are no sensitive receptors, such as schools, playgrounds, hospitals or day care centers within a 500 foot radius of the site.

1.4 REMEDIAL INVESTIGATION

A remedial investigation was performed and the results are documented in a companion document called "*Remedial Investigation Report, Brighton Green*", dated July 2011 (RIR).

Summary of Past Uses of Site and Areas of Concern

The property had been on the outer edge of a horseracing track from the late 1800's to the early 1900's. A residential dwelling occupied the site since the development of the lot in the 1920's. The AOCs identified for this site included historic fill and possible heating oil usage at the site.

Summary of the Work Performed under the Remedial Investigation

LEA on behalf of its client, Scarano Realty, LLC, performed the following scope of work:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Conducted a geophysical survey of the site;
3. Installed four soil borings across the entire project Site, and collected seven soil samples for chemical analysis from the soil borings to evaluate soil quality;
4. Installed one groundwater monitoring well throughout the Site and collected one groundwater sample for chemical analysis to evaluate groundwater quality;
5. Installed three soil vapor probes around Site perimeter and collected three samples for chemical analysis.

Summary of Environmental Findings

1. Elevation of the property ranges from 8.5 to 9 feet above sea level.

2. Depth to groundwater ranges from 6 to 6.5 feet at the Site.

3. Groundwater is presumed to flow is generally from north to south beneath the Site.

4. Depth to bedrock is approximately 1,300 feet at the Site.

5. The stratigraphy of the site, from the surface down, consists of 120 feet of Upper Glacial aquifer underlain by 50 feet of Gardiners Clay, underlain by 40 feet of the Jameco Aquifer, underlain by 600 feet of Magothy Aquifer, underlain by 200 feet of the Raritan confining unit, underlain by 300 feet of the Lloyd Aquifer

6. Soil/fill samples collected during the RI showed five metals with contamination exceeding Track 1 SCOs. Of these, barium, lead, copper and cadmium also exceeded Track 2 Restricted Residential SCOs. All Track 2 metals exceedances were limited shallow (0-2 foot) samples. With the exception of lead in one sample, all deeper soil samples (6-10 feet) achieved Track 1. SVOCs, VOCs, and PCBs were all below Track 1 SCOs. Soils from 0 to roughly 6 feet depths contained historic fill comprised of fill, ash, coal, and construction debris.

7. Groundwater samples collected during the RI did not detect VOCs, SVOCs or PCBs. Detected metals did not exceed TOGS 1.1.1 Class GA Guidance Values in the one unfiltered sample.

8. Soil vapor samples collected during the RI showed a wide variety of VOCs, consisting mainly of BTEX and associated compounds at concentrations generally below 75 $\mu g/m^3$. These compounds are most commonly associated with a spill of automotive fuel. The presence of MTBE and ethanol in vapor suggest a relatively recent spill. Past uses of the property do not indicate automotive fueling activities or other automotive fuel sources. Soil samples do not contain any VOCs in either shallow or deep soil samples. Groundwater did not detect any VOCs. Together, these observations indicate an offsite source area. TCE is identified in one sample at 3.2

$\mu g/m^3$ and PCE is identified all three samples but only one above 1 $\mu g/m^3$ (8.6 $\mu g/m^3$). Similar to BTEX compounds, PCE and TCE were not detected onsite and past uses of the property do not suggest the potential for onsite source areas. While no standards exist for soil vapor, no compounds exceed the Guidance for Evaluating Soil Vapor Intrusion in the State of New York (Final November 2006).

2.0 DESCRIPTION OF REMEDIAL ACTIONS

The factors considered during the selection of the remedial action included protection of human health, protection of the environment, compliance with standards, criteria, and guidelines (SCGs), short-term effectiveness and impacts, long-term effectiveness and permanence, reduction of toxicity, mobility, or volume of contaminated material, implementability, cost effectiveness, community acceptance, land use, and sustainability of the remedial action. The Site was remediated in accordance with the scope of work presented in an OER-approved Remedial Action Work Plan (RAWP) dated August 2011 and Stipulation List dated September 2, 2011. All deviations from the RAWP are noted below.

The following remedial actions were completed in this program:

1. Prepared a Community Protection Statement and performed all required NYC BCP citizen participation activities according to an approved Citizen Participation Plan (CPP).
2. Performed a Community Air Monitoring Program for particulates and volatile organic compounds.
3. Established Track 1 Soil Cleanup Objectives (SCOs). Excavated and removed all soil/fill exceeding Track 1SCOs and achieved Track 1 cleanup.
4. End-point samples were collected and analyzed to determine the performance of the remedy with respect to attainment of SCOs.
5. A Cupolex vapor barrier system was installed beneath the entire building slab as part of building construction.
6. Imported materials used for backfill and cover were in compliance with this plan and in accordance with applicable laws and regulations.
7. Transported off-site and disposed all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and

disposal, and this plan. Sampled and analyzed excavated media as required by disposal facilities. Maintained appropriate segregation of all excavated media onsite.

8. Screened excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
9. Managed Site mobilization, including; Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
10. Implemented storm-water pollution prevention measures in compliance with applicable laws and regulations.
11. Performed all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
12. Submitted an RAR that describes the remedial activities certifying that the remedial requirements have been achieved, defining the Site boundaries, and describing all Engineering and Institutional Controls implemented at the Site (none were required), and listing any changes from the RAWP.
13. A Site Management Plan to manage residual contamination is not required, as Track 1 objectives were achieved.

3.0 COMPLIANCE WITH REMEDIAL ACTION WORK PLAN

3.1 HEALTH & SAFETY PLAN (HASP)

The remedial construction activities performed under this program were in compliance with the Health and Safety Plan and applicable laws and regulations. The Site Safety Coordinator was Scott A. Yanuck.

3.2 COMMUNITY AIR MONITORING PLAN

The Community Air Monitoring Plan (CAMP) provided for the collection and analysis of air samples during remedial construction activities to ensure proper protections were employed to protect workers and the neighboring community. Monitoring was performed in compliance with the CAMP in the approved RAWP. The results of Community Air monitoring are shown in Appendix L.

Mitigation of dust from the Site was restricted using 6mm polyethylene sheeting to cover any exposed stockpiled material during, and between, working periods.

On October 28, 2011, VOCs were found in exceedance of the CAMP limit of 5 parts per million (ppm). In accordance with the plan, work was halted and monitoring continued. The levels rapidly dropped below 5 ppm and work was allowed to continue. The cause was determined to be fuel or exhaust from the excavator. No other CAMP exceedances were noted during the project.

3.3 SOIL/MATERIALS MANAGEMENT PLAN

The Soil/Materials Management Plan in the RAWP provided detailed plans for managing all soils/materials that were disturbed at the Site, including excavation, handling, storage, transport and disposal. It also included a series of controls to assure effective, nuisance free remedial activity in compliance with applicable laws and regulations. Remedial construction activities performed under this program were in full compliance with the SMMP in the approved RAWP.

3.4 STORM-WATER POLLUTION PREVENTION

Storm water pollution prevention included physical methods and processes to control and/or divert surface water flows and to limit the potential for erosion and migration of Site soils, via wind or water. Remedial construction activities performed under this program were in full compliance with methods and processes defined in the RAWP for storm water prevention and applicable laws and regulations.

DEVIATIONS FROM THE REMEDIAL ACTION WORK PLAN

The original Soil Vapor Barrier that was to be used on Site was W.R. Grace Preprufe 300R soil vapor retarder system under building slab and on the outside of foundation walls. The Soil Vapor Barrier used on Site was Cupolex Soil Vapor Intrusion mitigation system, using Aerated Floor Technology, located between backfill and building slab on the outside of foundation walls. The decision to utilize the Cupolex system was based on the following: ease of installation, ability to greatly decrease the required backfill, reduction in trucking, reduction in manual labor, and its overall cost effectiveness. On November 1, 2011, ***LEA*** contacted the OER requesting approval for the integration of the Cupolex System, rather than the original soil-vapor retarder system. On November 7, 2011, OER in consultation with NYCDOHMH responded to said request, approving the Cupolex installation. The installation of the Cupolex system is protective of public health and the environment. There were no other changes from the approved RAWP.

4.0 REMEDIAL PROGRAM

4.1 PROJECT ORGANIZATION

Principal personnel who managed the remedial action are Scott A. Yanuck and Christopher J. Connolly of LEA. The Professional Engineer (PE) and Qualified Environmental Professionals (QEP) for this project are Richard D. Galli of Galli Engineering and Scott A. Yanuck, respectively. The Professional Engineer (Richard Galli) certified that all remedial activities were observed by a Qualified Environmental Professional (QEP) under his supervision and that the remediation requirements set forth in the RAWP and stipulation list and other relevant provisions of ECL 27-1419 have been achieved in full conformance the RAWP.

The Professional Engineer reviewed all pre-remedial plans submitted by contractors for compliance with this Remedial Action Work Plan and certified compliance in the Final Remediation Report.

The Professional Engineer certified all remedial information listed in this Final Remedial Action Report. Certification is attached at the beginning of this report.

4.2 SITE CONTROLS

Site Preparation

- Prior to the commencement of any remedial work, all field personnel were required to attend an orientation meeting, in which the general site operations were outlined, along with health and safety and field procedures.
- The presence of utilities and easements on site were fully investigated prior to any work, using the One-Call System (811). All invasive activities were performed incompliance with applicable laws and regulations to assure safety. Utility companies and other responsible authorities were contacted to locate and mark the locations, and a copy of the Markout Ticket was retained by the contractor prior to the commencement of drilling, excavation and other invasive subsurface

operations. No overhead utilities were located directly above the work site. Proper safety and protective measures pertaining to utilities and easements, and compliance with all laws and regulations were employed during invasive and other work contemplated under the RAWP. The integrity and safety of on-Site and off-Site structures was maintained during all invasive, excavation or other remedial activity performed under the RAWP.

- All relevant and necessary agency approval documents, including NYC Buildings Work Permits for Fencing, Construction Equipment, a Sidewalk Shed, Scaffolding, and Temporary Light and Power, were acquired and appropriately displayed prior to any remedial work.
    - An OER Project Notice was erected at the project entrance and in place during all phases of the Remedial Action.

Mobilization

All equipment brought to the Site or maintained on-site was checked out as operational prior to the mobilization as per the NYCDOB Requirements.

Proper traffic control was performed in accordance with NYCDOB Construction Codes. During any roll-off or material delivery or collection, traffic was halted at a safe distance from the activities by workers utilizing high visibility clothing, until the activities ceased, and the trucks had departed the area.

Grubbing, fencing, truck wash, construction, etc.

No Site clearing and Site grubbing of organic matter (wood, roots, stumps, etc.) or other solid waste were required prior to all remedial work.

Prior to the start of any remedial construction activities, the entire Sites perimeter was secured with a plywood fence in accordance with New York City Department of Building requirements.

Acquisition Of Agency Approvals

During the remedial action, the Volunteer has addressed all CEQR requirements and achieved all substantive compliance requirements for attainment of applicable natural resource or other permits.

All permits or government approvals required for remedial construction were obtained prior to the start of remedial construction. Construction permits were acquired from the NYCDOB (including but not limited to New Building, Builders Pavement Plan, electrical, plumbing, sprinkler, sheeting and shoring, etc.). All permits and notices included a citation of the law, statute or code to be complied with, the originating agency, and a contact name and phone number in that agency.

Soil Screening

Field screening of soils being excavated and removed from site were completed using visual, olfactory, and PID measurements. Constant CAMP PID and Dust monitoring was conducted during any excavation of onsite soils.

Stockpile Management

All hazardous waste and non-hazardous contaminated waste removed from the site were transported by hand, into plastic lined hazardous and non-hazardous waste roll-offs, located along Brighton 1st Street. If materials were excavated, but roll-offs were full, then said materials were stockpiled on-site, and kept separate from any existing non-contaminated soils, segregated and stored on poly sheeting. If left overnight, any stockpiled materials were covered by poly sheeting to eliminate any dust migration.

Truck Inspection

It was ensured that all trucks lowered their roll-off covers prior to departing the site with contaminated materials. As haulage trucks were not required to drive onto the site, no wheel wash was necessary.

Site Security

The entire perimeter of the Site was secured using a 12' high fence, as well as a padlocked main gate. The applicant maintained a daily presence log sheet of all workers, contractors and visitors. The Site was secured at night in accordance with NYCDOB Construction Codes.

Nuisance Controls

Suitable actions were taken to prevent off-Site odor and dust nuisances, including steps to be taken if nuisances are detected. Generally, dust was managed by application of physical covers. Odors were controlled by limiting the area of open excavations, physical covers, and by a series of other actions (called operational measures). The project was also maintained to comply with NYC noise control standards.

Reporting

Daily Reports

Daily reports providing a general summary of activities for each day of *active remedial work* were be emailed to the OER Project Manager by the end of the following day. Those reports included:

- Project number and statement of the activities and 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;
- A summary of any citizen complaints, with relevant details (basis of complaint; actions taken; etc.);
- A summary of CAMP excursions, if any;
- Photograph of notable Site conditions and activities.

Daily reports can be found in Appendix G.

An alphanumeric site map was used to identify locations described in reports submitted to OER and is shown in Figure 4.

Record Keeping and Photo-Documentation

Records of all job-site remedial work were kept. These records were maintained on-Site during the project, and were available for inspection by OER staff. Representative photographs were taken of the Site prior to any remedial activities and during major remedial activities to illustrate remedial program elements and contaminant source areas. Digital photographs of the remedial action are included in Appendix H.

4.3 MATERIALS EXCAVATION AND REMOVAL

- Track 1 Soil Cleanup Objectives (SCOs) were proposed for this project. The SCOs for this Site are listed in Table 1. Soil and materials management on-Site and off-Site, including excavation, handling and disposal, was conducted in accordance with the Soil/Materials Management Plan in Appendix 3 of the RAWP. The locations of excavation work are shown in Figure 5.

- Hazardous wastes (as defined by CFR40 Subpart C, §261.24) were excavated from the entire Site, down to a depth of between 2-3-feet below grade, and approximately 8-feet in the area of concern near the locations of SB-3 and SB-3A. Non-hazardous materials were removed from the entire Site, down to a depth of 6-feet below grade.

- A total of 153.45 Tons of Hazardous wastes (as defined by CFR40 Subpart C, §261.24) and 136.07 Tons of Non-hazardous materials were removed from the Site.

- Excavation of Hazardous wastes (as defined by CFR40 Subpart C, §261.24) and Non-hazardous materials was systematically conducted across the entire Site, from the northeast corner to the southwest corner.

- No excavated materials were reused on Site.

End Point Sample Results

Analytical Chemists, (Farmingdale, New York), a New York State ELAP certified lab (10950), was used for all soil end-point sample analyses. End-point samples were analyzed for trigger analytes (those for which SCO exceedance is identified) utilizing the following methodology:

Soil analytical methods included:

- Volatile organic compounds by EPA Method 8260;
- PAH Semi-volatile organic compounds by EPA Method 8270;
- Total Lead

Neither LNAPL and/or DNAPL were detected.

Analysis of end-point sample SB-3 EP (8'), collected from 8-feet below grade in the area of the original SB-3, showed the following;

- VOCs Chloroform and 1,2,4-Trimethylbenzene, both detected at levels below their respective Track 1 SCOs.
- Lead, detected at a level below its corresponding Track 1 SCO.

One duplicate sample, field, and lab blank samples was analyzed to assess sampling and lab artifacts.

A tabular and map summary of end-point sampling results is included in Table 2 and Figure 6, respectively.

4.4 MATERIALS DISPOSAL

- On November 22, 2011, ***LEA*** completed and submitted a Material Profile Sheet to Clean Earth, in order to gain approval for the disposal of 200-tons of Lead contaminated Hazardous Waste (as defined by CFR40 Subpart C, §261.24). On the same day, a second Material Profile Sheet was submitted for the disposal of 150-tons of Non-Hazardous Materials. These requests were for disposal at the

Clean Earth South Kearny facility located at 105 Jacobus Avenue, South Kearny, New Jersey 07032.

- Prior to the commencement of any remedial work, ***LEA*** was provided with the following Approval Numbers from Clean Earth;
  - 113082111 – Hazardous Waste (as defined by CFR40 Subpart C, §261.24)
  - 113082593 – Non-Hazardous Lead Contaminated Waste

- The dates, quantities, and destinations of excavated materials is summarized below:

Date	Roll-offs Removed	Material Type	Quantity (tons)	Destination
10-11-11	1	Hazardous	26.93	CleanEarth South Kearny, NJ
10-25-11	1	Hazardous	20.41	CleanEarth South Kearny, NJ
10-28-11	1	Hazardous	19.92	CleanEarth South Kearny, NJ
11-04-11	1	Hazardous	19.02	CleanEarth South Kearny, NJ
11-08-11	2	Hazardous	46.28	CleanEarth South Kearny, NJ
11-14-11	1	Hazardous	20.89	CleanEarth South Kearny, NJ
11-29-11	1	Non-Hazardous	23.98	CleanEarth South Kearny, NJ
12-02-11	1	Non-Hazardous	24.09	CleanEarth South Kearny, NJ
12-05-11	1	Non-Hazardous	21.02	CleanEarth South Kearny, NJ
12-06-11	1	Non-Hazardous	21.41	CleanEarth South Kearny, NJ
12-09-11	1	Non-Hazardous	20.66	CleanEarth South Kearny, NJ
12-12-11	1	Non-Hazardous	20.91	CleanEarth South Kearny, NJ
12-19-11	1	Non-Hazardous	24.74	CleanEarth South Kearny, NJ

For details of the precise locations and progress of remedial work throughout the process, see the Daily Reports in Appendix G.

The tonnage of material removed and disposed off-Site is presented below:

Destination	Type of Material	Quantity
Clean Earth, South Kearny, NJ	Hazardous Waste	153.45-tons
Clean Earth, South Kearny, NJ	Non-Hazardous Materials	156.81-tons

Letters from ***LEA*** to the disposal facility providing material type, source and data; and acceptance letters from disposal facility stating it is approved to accept these materials are attached in Appendix B. Manifests are included in Appendix C. The Table above shows the total quantities of each class of material removed from the Site and the disposal locations.

4.5 BACKFILL IMPORT

- On November 16, 2011, a letter was received from a NYSDOT Regional Geotechnical Engineer, providing test results, and subsequent approval, for stockpiled RCA fill material (stockpile #2011-3), located at Pebble Lane Associates, Maspeth, New York, to be used at the Site. It was stated that this material was not to be placed next to exposed aluminum due to presence of calcium, which would cause corrosion.

- Approximately 40 cubic yards of sand was also used as the top layer of backfill on Site. This sand was provided by New York Sand & Stone, LLC, of Brooklyn, New York. Sand was inspected utilizing visual and olfactory methods, along with use of the PID.

- On December 8, 2011, ***LEA*** contacted OER requesting approval for the RCA (Recycled Concrete Aggregate) based backfill materials that were to be used on Site. These materials were reviewed by NYSDOT technical staff prior to this request. On the same day, OER responded stating that no "approval" will be given RCA material. Instead, it was confirmed that, as long as the material is

from a regulated facility, and is imported and used as specified in the RAWP, work could continue. It was agreed that onsite screening, and sufficient dust suppression would be implemented.

- Between December 16 and December 20, 2012, a total of 195-tons of RCA material and 40 cubic yards of raw sand were placed in all areas of the Site surrounding the existing building foundation and elevator pit, up to approximately 2-feet below grade. A three-inch layer of concrete was poured over this backfill, on top of which rested the Cupolex Soil Vapor Barrier system.
- Each individual delivery of backfill material was field screen using visual and olfactory methods, as well as a PID, to test for the existence of VOCs. None of the backfill material was found to contain any volatile organic compounds, odors, or visual evidence of contamination.

Documentation showing the NYSDOT approval and stockpile test results from both Pebble Lane Associates and New York Sand and Stone can be found in Appendix G. A map showing backfill placement locations at the Site is shown in Figure 7.

4.6 DEMARACTION

No demarcation layer was needed, as all soils contaminated above Track 1 SCOs were entirely removed from the Site.

5.0 ENGINEERING CONTROLS

No engineering controls were employed at this site. As part of construction a composite cover system and a soil vapor barrier was installed to mitigate potential intrusion of soil vapor from offsite.

(1) Soil Vapor Barrier

- A Cupolex Soil Vapor Intrusion mitigation system was utilized to prevent intrusion of any vapors from offsite.

- The Cupolex system, which comprises of arrays of interlocking hardened plastic domes, were laid on concrete slab. Concrete was poured over the entire layout, creating a strengthened self-bearing aerated floor. Manufacturer's documentation showing the design and installation of the system is included in Appendix I.
- The Cupolex floor was laid across the entire site, outside of the existing foundation walls. An as-built diagram showing the layout of Site-specific Cupolex system can be seen in Figure 8.

(2**)** Composite Cover System

- A layer of concrete slab was poured prior to and following the installation of the Cupolex Soil Vapor Intrusion mitigation system. A composite cover system is comprised of 2-feet of raw sand-previously mentioned and covered by topsoil from Home Depot- placed in the very limited open spaces (<5% of site), concrete covered sidewalks, and concrete building slabs. Figure 8.0 shows the location of each cover type built at the Site.

6.0 INSTITUTIONAL CONTROLS

No Institutional Controls were required for this site, since a Track 1 Cleanup was achieved.

7.0 SITE MANAGEMENT PLAN

A site management plan was not required for this site since a Track I Cleanup was achieved and no engineering controls or institutional controls were employed.