**450 MAIN STREET**

**FARMINGDALE PLAZA CLEANERS**

**NASSAU COUNTY**

**FARMINGDALE, NEW YORK**

**SITE MANAGEMENT PLAN**

**NYSDEC Site Number: 130107**

**Prepared for:**

Farmingdale Commons, LLC

495 Mola Avenue, Unit 2

Elmwood Park, New Jersey 07407

**Prepared by:**

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**Revisions to Final Approved Site Management Plan:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Revision No.** | **Date Submitted** | **Summary of Revision** | **NYSDEC Approval Date** |
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**June 2018**

CERTIFICATION STATEMENT

i Thomas Andrews certify that I am currently a NYS registered professional engineer and that this Site Management Plan 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).

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**FARMINGDALE COMMONS, LLC**

**NASSAU COUNTY**

**FARMINGDALE, NEW YORK**

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**List of Acronyms**

AS Air Sparging

ASP Analytical Services Protocol

BCA Brownfield Cleanup Agreement

BCP Brownfield Cleanup Program

CERCLA Comprehensive Environmental Response, Compensation and Liability Act

CAMP Community Air Monitoring Plan

C/D Construction and Demolition

CFR Code of Federal Regulation

CLP Contract Laboratory Program

COC Certificate of Completion

CO2 Carbon Dioxide

CP Commissioner Policy

DER Division of Environmental Remediation

EC Engineering Control

ECL Environmental Conservation Law

ELAP Environmental Laboratory Approval Program

ERP Environmental Restoration Program

EWP Excavation Work Plan

GHG Green House Gas

GWE&T Groundwater Extraction and Treatment

HASP Health and Safety Plan

IC Institutional Control

NYSDEC New York State Department of Environmental Conservation

NYSDOH New York State Department of Health

NYCRR New York Codes, Rules and Regulations

O&M Operation and Maintenance

OM&M Operation, Maintenance and Monitoring

OSHA Occupational Safety and Health Administration

OU Operable Unit

PID Photoionization Detector

PRP Potentially Responsible Party

PRR Periodic Review Report

QA/QC Quality Assurance/Quality Control

QAPP Quality Assurance Project Plan

RAO Remedial Action Objective

RAWP Remedial Action Work Plan

RCRA Resource Conservation and Recovery Act

RI/FS Remedial Investigation/Feasibility Study

ROD Record of Decision

RP Remedial Party

RSO Remedial System Optimization

SAC State Assistance Contract

SCG Standards, Criteria and Guidelines

SCO Soil Cleanup Objective

SMP Site Management Plan

SOP Standard Operating Procedures

SOW Statement of Work

SPDES State Pollutant Discharge Elimination System

SSD Sub-slab Depressurization

SVE Soil Vapor Extraction

SVI Soil Vapor Intrusion

TAL Target Analyte List

TCL Target Compound List

TCLP Toxicity Characteristic Leachate Procedure

USEPA United States Environmental Protection Agency

UST Underground Storage Tank

VCA Voluntary Cleanup Agreement

VCP Voluntary Cleanup Program

**ES** EXECUTIVE SUMMARY

The following provides a brief summary of the controls implemented for the Site, as well as the inspections, monitoring, maintenance and reporting activities required by this Site Management Plan:

The site was divided into two operable units. An operable unit represents a portion of a remedial program for a site that for technical or administrative reasons can be addressed separately to investigate, eliminate or mitigate a release, threat of a release or exposure pathway resulting from the site contamination. Operable Unit 1 (OU#1) consists of contaminated soil and soil vapor and includes the plaza property and portions of adjacent properties. Operable Unit 2 (OU2) deals with the groundwater issues both on-site and off-site. This SMP addresses soil vapor and site groundwater.

| Site Identification: | Farmingdale Plaza Cleaners Site (DEC Site #: 130107). 450 Main Street, Farmingdale, NY | |
| --- | --- | --- |
| Institutional Controls: | 1. The property may be used for commercial or industrial purposes. | |
|  | 2. Environmental Easement | |
|  | 3. All ECs must be inspected at a frequency and in a manner defined in the SMP.  Environmental Easement – Annual Inspection  SVE O&M – Monthly Inspection | |
| Engineering Controls: | 1. Soil Vapor Extraction System | |
|  |  | |
| Inspections: | | Frequency |
| 1. SVE Inspection | | Monthly |
| Monitoring: | |  |
| 1. SVE System Performance Monitoring | | Quarterly |
| 2. Vapor Monitoring | | Annually |
| Maintenance: | |  |
| 1. SVE System Maintenance | | Monthly |
| Reporting: | |  |
| 1. Treatment System Data | | Quarterly |
| 2. Periodic Review Report | | Annually |

Further descriptions of the above requirements are provided in detail in the latter sections of this Site Management Plan.

1. Introduction

1.1 General

This Site Management Plan (SMP) is a required element of the remedial program for the property at 450 Main Street located in Farmingdale, New York (hereinafter referred to as the “Site”). See **Figure 1**. The Site is currently in the New York State (NYS)Superfund, Site No. 130107, which is administered by New York State Department of Environmental Conservation (NYSDEC).

The Farmingdale Commons LLC. entered into an Order on Consent and Administrative Settlement on July 1, 2015 with the NYSDEC to undertake the operation, maintenance, monitoring, inspection, and reporting requirements for the SVE system that has been operating at the Site since in or about November 2011 in accordance with the ROD for OU-1 of the Site. A Site Map depicting the environmental installations and all current property features is provided in **Figure 2**. The boundaries of the Site are more fully described in the metes and bounds Site description that is part of the site survey and Environmental Easement provided in **Appendix 1**.

After completion of the remedial work performed by New York State, some contamination was left at OU#1 of this Site, which is hereafter referred to as “remaining contamination”. Institutional and Engineering Controls (ICs and ECs) have been incorporated into the Site remedy to control exposure to remaining contamination to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Nassau County Clerk, requires compliance with this SMP and all ECs and ICs placed on the Site.

This SMP was prepared to manage remaining contamination at the Site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor’s successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

It is important to note that:

* This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement:
* Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6 NYCCR Part 375, and the Order on Consent: Site# 130107 and thereby subject to applicable penalties.

All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. A list of contacts for persons involved with the site is provided in Appendix 2 of this SMP.

This SMP was prepared by Environmental Logic, LLC, on behalf of Farmingdale Commons, LLC, in accordance with the requirements of the NYSDEC’s DER-10 (“Technical Guidance for Site Investigation and Remediation”), dated May 2010, and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the ICs and/or ECs that are required by the Environmental Easement for the site.

1.2 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC’s project manager. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, upgrades to or shut-down of a remedial system, post-remedial removal of contaminated sediment or soil, or other significant change to the site conditions. In accordance with the Environmental Easement for the site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

## 1.3 Notifications

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with the NYSDEC’s DER-10 for the following reasons:

* 60-day advance notice of any proposed changes in Site use that are required under the terms of the Order on Consent and Settlement Agreement, and 6 NYCRR Part 375 and/or Environmental Conservation Law.
* 7-day advance notice of any field activity associated with the remedial program.
* 60-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan -Appendix 7 (to be provided in conjunction with task specific scope of work for redevelopment).
* Notice within 48-hours of any damage or defect to the foundation, structures or EC that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.
* Verbal notice by noon of the following day of any emergency, such as a fire; flood; or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
* Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the EC’s.

Any change in the ownership of the Site or the responsibility for implementing this SMP will include the following notifications:

* At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of the Order on Consent and Settlement Agreement and all approved work plans and reports, including this SMP.
* Within 15 days after the transfer of all or part of the Site, the new owner’s name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

**Table A** on the following page includes the contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of the Site-related contact information is provided in **Appendix 2.**

**Table A: Notifications\***

|  |  |
| --- | --- |
| **Name** | **Contact Information** |
| NYSDEC Project Manager-  Brian Jankauskas, PE | 518-402-9626 [  [brian.jankauskas@dec.ny.gov](mailto:brian.jankauskas@dec.ny.gov) |
| NYSDEC Regional HW Engineer  Walter Parish | 631-444-0240  [walter.parish@dec.ny.gov](mailto:walter.parish@dec.ny.gov) |
| NYSDEC Site Control  Kelly Lewendowski | 518-402-9553  [DerWeb@dec.ny.gov](mailto:DerWeb@dec.ny.gov) |

\* Note: Notifications are subject to change and will be updated as necessary.

## 2.0 SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL

**ACTIONS**

2.1 Site Location and Description

The Site is located at 450 Main Street in the Village of Farmingdale, Town of Oyster Bay, Nassau County, Long Island, New York consisting of Lot 269 in Block 102 of Section 49 as identified by the Village of Farmingdale Assessor's office and as described in the site survey/metes and bounds in Appendix 1. The Site is situated on an approximately 1/2-acre parcel and is comprised of a 177,422 square feet plot of land, on the western side of Main Street and is situated between Grant Avenue to the north and Route 109 to the south (see **Figure 1 & 2**). The boundaries of the Site are more fully described in **Appendix 1**, Site Survey and Environmental Easement.

The owner of the Site parcels at the time of the issuance of this SMP is: Farmingdale Commons LLC.

2.2 Physical Setting

2.2.1 Land Use

The Site consists of the following: a 21,000 square foot CVS store and associated parking area. It is commercially zoned property and is currently utilized for commercial uses. The building is constructed as slab-on-grade building which was developed in 1983 and renovated in 2016. The building is currently heated by natural gas and the property is connected to municipal sewer and water. The Site currently contains a soil vapor extraction (SVE) system that provides vacuum beneath the building to prevent vapor intrusion. The CVS tenant moved in during April of 2017. The property is located in a mixed neighborhood of apartments, restaurants, and retail business.

2.2.2 Geology

Long Island, as part of the Outer Lands region, is formed largely of two spines of glacial moraine, with a large, sandy outwash plain southeastwards, towards its barrier islands and the Atlantic Ocean. These moraines consist of gravel and loose rock left behind during the two most recent pulses of Wisconsin glaciation some 21,000 years ago (19,000 BC.) The Site specific geology has been reported through previous geotechnical investigation with the installation of soil borings and monitor well installations to be mostly sand, which is consistent with the Long Island prong regional geology. A confining layer was reportedly encountered at a depth of around 90 feet below ground surface at some locations on-site. The topography of the Site and the surrounding properties is relatively level, sloping gently to the south from about 60 feet above mean seal level (AMSL) on-site to the South Bay. The historic reports detailing the geology and cross section of lithology are provided in **Appendix 3**.

* + 1. Hydrogeology

Three major and one minor aquifer make up the Long Island sand and gravel aquifer system. In sequence from shallowest to the deepest, the Long Island aquifers are: the Upper Glacial, the Magothy and the Lloyd Aquifers. Synoptic measurements collected during historic ground water sampling events by Whitestone reported that the approximate depth to groundwater to range on-site from 15 feet to 20 feet below ground surface (bgs). The synoptic measurements were used to create isocontours and approximate groundwater flow direction previously reported to be toward the south. The historic reports which have more information concerning the historic ground water investigation, monitoring well details ground water flow and contours are included in **Appendix 3**.

## 2.3 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 OU-1 of the Site. Full titles for each of the reports referenced below are provided in Section 8.0 - References.

Several consultants have previously investigated OU#1 of the Site and submitted reports as follows:

* *Supplemental Remedial Investigation Summary Report*, *Farmingdale Plaza Site* (Whitestone Associates, Inc., September 2004);
* *Phase I Environmental Site Assessment (PHIESA), (*Land America, 2005*)*
* *Final Remedial Investigation Report, Farmingdale Plaza, Cleaners Site* (O'Brien & Gere, August, 2007);
* *Work Plan for Interim Remedial Design of SVE and sub-slab depressurization system (SSDS)*, *Farmingdale Plaza Cleaners* (Earth Tech, February 2009);
* *Interim Remedial Measure Bid package, Farmingdale Plaza Cleaners Site* (AECOM, June 2011);
* *Interim Remedial Measure RFP Addendum Number 2, Farmingdale Plaza Cleaners Site,* (AECOM, June 2011);
* *Construction Completion Report (AECOM 2012);*
* *Periodic Review Report* (AECOM 2013);
* *Soil Management Plan* (CA Rich, 2015);
* *SVE System Operation and Maintenance Manual (Environmental Assessment and Remediation, 2015) and;*
* Operable Unit Number 01- Record of Decision by Division of Environmental Remediation New York State Department of Environmental Conservation, March 2012

In addition, the Record of Decision for OU2 (Operable Unit Number 02- Record of Decision by Division of Environmental Remediation New York State Department of Environmental Conservation, March 2014) was reviewed.

The pertinent information from these reports has been summarized within this report and included in **Appendix 3**.

The property was originally developed as “Farmingdale Plaza” in 1983: a one-story masonry structure of approximately 33,000 square feet which was broken into several tenant spaces which included a Waldbaum's Supermarket, dry cleaners, Lucky House Chinese Restaurant, and Main Street Cards and Gifts. The Farmingdale Plaza Cleaners began operation in 1983.

Environmental investigations near the Site began in the late 1990s by the EPA as a result of a nearby National Priority List (NPL) site, identified as the Liberty Industrial Finishing NPL Site (LIFS), and located approximately 1,000 feet south (downgradient) of the Plaza. The investigation of groundwater at this Site initially detected a large plume of chlorinated volatile organic compounds (CVOCs). Site Investigation (SI) commencing in 2000 of the LIFS site further identified two contaminated plumes: Plume A originating at the LIFS and Plume B migrating beneath the LIFS from an off-site source in the vicinity of the Farmingdale Plaza.

The property owner (A&P, Inc.) at the time retained Whitestone Associates to conduct environmental investigation. The 2001 SI performed by Whitestone Associates found no VOCs in site soils above TAGM. This investigation did find impacts of CVOCs, benzene, PCE and related degradation products (i.e. TCE, 1,2-DEC) in the groundwater, with PCE concentrations exceeding the groundwater standards. Because a PCE source was not identified in soils, Whitestone concluded that the groundwater contamination was regional, and not related to Site operations.

As a result of data collected during the USEPA investigation, the Site was listed on the New York State Registry of Inactive Hazardous Waste Site in December 2002 with a designation of Class 2. A Class 2 listing indicates that the site poses significant threat to the public health or environment and action is required.

In January 2005, NYSDEC referred the Farmingdale Plaza Cleaners Site for funding by the State Superfund for implementation of a Remedial Investigation/Feasibility Study (RI/FS). LandAmerica was retained by UBS Real Estate Investments, Inc. to conduct a Phase I Environmental Site Assessment (Phase I ESA) in September 2005. Land America concluded in their 2005 Phase I ESA that the on-site drycleaners was not the source of the ground water impacts because the highest concentrations of CVOCs were in the upgradient wells, indicating a larger plume migrating on-site. Additionally, only minor shallow soil contamination was identified on-site with low-level exceedances of the regulatory criteria. No contamination was identified in the saturated groundwater zone indicating that the underlying groundwater contamination was not coming from the limited shallow contamination. **Figure 2** depicts the location of the monitoring well network located on-site.

After the initial Remedial Investigation (RI) was conducted by the Department, with the RI conducted by O'Brien & Gere under the oversight of the Department, and included a soil vapor intrusion (SVI) investigation for each business in Farmingdale Plaza in March 2006 as well as surrounding properties in January 2007. The investigation included pre-sampling survey, indoor air sampling, sub-slab soil vapor sampling, soil vapor sampling, and ambient air sampling. No contaminants of concern (COCs) were detected in indoor air samples at concentrations exceeding the NYSDOH guidance values. Results of the sub-slab soil vapor sampling indicated that COCs were detected at each of the eight structures and the highest soil gas concentrations were found under the Farmingdale Plaza Cleaners. It was reported that the soil vapor samples detected with elevated concentrations of PCE in the sample collected along the side of the Milestone Apartments which are located south of the Farmingdale cleaner Site. PCE was detected at concentrations of 0.5 ug/m3 and 1.1 ug/m3 in two of four outdoor ambient air samples collected near the Garden Apartments. CVOCs related to dry-cleaning operations were detected in the subsurface soil samples collected along the eastern portion, central portion, and northern portion of the Farmingdale Plaza Cleaners. The sub-slab soil sample collected from the northern portion of the Farmingdale Plaza detected PCE at a concentration exceeding TAGM. No noticeable odors or stains were observed in subsurface soil samples collected around the perimeter of the building or in the utility boring soil samples collected from south of the building.

The RI also assessed groundwater at the Site monitoring wells with the following reported results:

* Toluene was detected above groundwater standards in the samples collected from the 40 feet and 80 feet intervals.
* PCE was detected above groundwater standards at the 20-, 40-, and 60-feet intervals.
* PCE and TCE were detected at concentrations above groundwater standards in the samples collected from EPA-MW-4A and EPA-MW-5B during the February 2006 sampling event.
* During February 2007 sampling event, concentrations of PCE, TCE and cis-1,2-DCE were detected above groundwater standards at eight monitoring wells. PCE (62 ug/L) and TCE (17 ug/L) were detected at concentrations exceeding the groundwater standards at EPA-MW-4A, located just south of the Farmingdale Plaza. Concentrations of PCE were also detected above groundwater standards at DEC-MW-5 (12 ug/L), DEC-MW-6 (21 ug/L), and DEC-MW-7 (14 ug/L). Further downgradient at MW-22A, PCE (160 ug/L), TCE (29 ug/L) and cis-1 ,2-DCE (55 ug/L) were also detected above groundwater standards. Upgradient of the Site, concentrations of PCE were detected above groundwater standards at EPA-MW-5A (20 ug/L), DEC-MW-2 (12 ug/L), and DECMW-3 (170 ug/L). TCE (38 ug/L) and cis-1,2-DCE (5.8 ug/L) were detected above groundwater standard at DEC-MW-3 and DEC-MW-2, respectively.

The results of Obrien & Gere investigation prompted installation of an interim remedial measure SVE system to address potential exposure to contaminated soil vapors detected beneath the six of the tenant spaces (Farmingdale Plaza Cleaners, Waldbaum's Supermarket, Lucky House Chinese Restaurant, Main Street Cards and Gifts).

An SVE pilot test was performed by AECOM’s Yu & Associates (subcontractor) in February 2009. The results of the pilot study were used to design a full-scale SVE system (AECOM, 2011). Environmental Assessment and Remediation (EAR) was selected to install the SVE system. A *Construction Completion Report* (CCR) summarizing the Soil Vapor Extraction (SVE) Interim Remedial Measure (IRM) installed at the Farmingdale Plaza Cleaners Site was prepared by AECOM Technical Services Northeast, Inc. , for NYSDEC Division of Environmental Remediation (DER) under Work Assignment D004456-28 which provided the final installation as-builts and other pertinent information regarding the SVE system. The results of the monitoring of vapors were used to assess if an addition of a Sub-Slab Depressurization System (SSDS) would be necessary.

## 2.4 Remedial Action Objectives

A ROD was issued in March 2012 with the selected remedy of No Further Action (NFA) for the Site, under the stipulation that the IRM and Remedial Action Objective (RAO) be continued (i.e., operation of the SVE system) to address soil/soil vapor concerns until no longer necessary, and the implementation of any prescribed ICs/ECs that have been identified for the Site. No other media was referenced in the ROD regarding remedial action objectives.

The Remedial Action Objectives (RAOs) for the Site as listed in the Record of Decision dated March 2012 are as follows:

**Soil**

RAOs for Public Health Protection

* Prevent ingestion/direct contact with contaminated soil.
* Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

* Prevent migration of contaminants that would result in groundwater or surface water contamination.
* Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

**Soil Vapor**

RAOs for Public Health Protection

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

### 2.5.1 Soil

Historic environmental investigation has detected only residual impacts of the chlorinated volatile organic compounds (CVOCs) associated with drycleaner byproduct contaminants in the near surface soils and not in the saturated vadose zone, so no active remediation such as hot-spot excavation was deemed necessary. The historic reports which go over in detail the previous environmental investigation of soils are included as **Appendix 3**.

### 2.5.2 Groundwater

Ground water has been reported from 15 to 20’ below ground surface and to flow towards the south. It was reported in the SI that two contaminated plumes existed, Plume A originating at the LIFS and Plume B migrating beneath the LIFS from an off-site source in the vicinity of the Farmingdale Plaza. To evaluate Site ground water quality, a monitor well network consisting of 8 monitor wells was installed and monitored through the collection of ground water samples. The ground water sampling event in February 2007 detected concentrations of the CVOCs PCE, TCE and cis-1,2-DCE in exceedance of the NYSDEC Class GA Standards at 8 of the 10 monitoring wells. **Figure 2** depicts the monitoring well network, which includes all close proximity EPA monitor wells.

### 2.5.3 Soil Vapor

O'Brien & Gere conducted soil vapor intrusion (SVI) investigation for each business in Farmingdale Plaza in March 2006 and for surrounding properties in January 2007. Results of the sub-slab soil vapor sampling indicated that COCs were detected at each of the eight structures and the highest soil gas concentrations were found under the Farmingdale Plaza Cleaners. Both subsurface soil vapor samples detected VOCs, with elevated concentrations of PCE in the sample collected along the side of the Milestone Apartments. Based on the results, 4 of the tenant spaces (Farmingdale Plaza Cleaners, Waldbaum's Supermarket, Lucky House Chinese Restaurant, Main Street Cards and Gifts) as well the offsite Garden Apartments, matched criteria for mitigation of soil vapors.

Due to the detection of volatile organic vapors the NYSDEC required continued operation of the SVE system as part of the selected remedy for OU#1. There are no impacts to any surface water, sediments or other ecological receptors which require a Remedial Action Objective (RAO).

# 3.0 institutional and Engineering control plan

## 3.1 General

Since remaining vapor contamination exists at the Site, Institutional Controls (ICs) and Engineering Controls (ECs) are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all the IC/ECs at the Site. The IC/EC Plan is one component of the SMP and is subject to revision by the NYSDEC.

This plan provides:

* A description of all the IC/ECs on the Site;
* The basic implementation and intended role of each IC/EC;
* A description of the key components of the ICs set forth in the Environmental Easement;
* A description of the controls to be evaluated during each required inspection and periodic review;
* A description of plans and procedures to be followed for implementation of IC/ECs for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site; and;
* Any other provisions necessary to identify or establish methods for implementing the IC/ECs required by the site remedy as determined by the NYSDEC.

## 3.2 Institutional Controls

A series of ICs is required by the ROD to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination; and, (3) limit the use and development of the Site to commercial and industrial uses only. Adherence to these ICs on the Site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to, or extinguishment of, the Environmental Easement. The IC boundaries are show on **Figure 2**. These ICs are:

* The property may be used for commercial and industrial uses;
* All ECs must be operated and maintained as specified in this SMP;
* All ECs must be inspected at a frequency and in a manner defined in the SMP;
* The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Nassau County Department of Health to render it safe for use as drinking water, or for industrial purpose, and the user must first notify and obtain written approval to do so from the Department.
* Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;
* Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP;
* All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP;
* Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP;
* Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP;
* Access to the Site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement;
* The potential for vapor intrusion must be evaluated for any buildings developed on the property, in the area of the former drycleaner, and any potential impacts that are identified must be monitored or mitigated; and;
* Vegetable gardens and farming on the Site are prohibited.

## 3.3 Engineering Controls

### 3.3.1 Soil Vapor Extraction Systems

Procedures for operating and maintaining the soil vapor extraction (SVE) system are documented in the SVE Operation and Maintenance Plan (**Appendix 6** of this SMP).**Figure 3** depicts the location of the ECs for the site. **Figure 4** depicts the SVE layout.

An SVE pilot test was performed by AECOM’s Yu & Associates (subcontractor) in February 2009. The results of the pilot study were used to design a full-scale SVE system (AECOM, 2011). Environmental Assessment and Remediation (EAR) was selected to install the SVE system. A *Construction Completion Report* (CCR) summarizing the Soil Vapor Extraction (SVE) Interim Remedial Measure (IRM) installed at the Farmingdale Plaza Cleaners Site was prepared by AECOM Technical Services Northeast, Inc. (AECOM), for New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation (DER) under Work Assignment D004456-28 which provided the final installation as-builts and other pertinent information regarding the SVE system.

EL took over the environmental aspects of this Site at the end of March of 2016. At this time, the buildings were boarded up and no longer contained tenants, and the SVE system was vandalized and not working. EL repaired the existing above ground system components to restart it, including restoring the carbon strippers. (It was reported by the previous consultant CA Rich in its 2015 maintenance report that the air stripping carbon kettles were bypassed by the system’s effluent stream.) To prevent any VOCs emissions, EL replaced the carbon in the kettles and opened the stream so that it once again went through the stripper carbon kettles in June of 2016. The SVE system remained in operation until construction activities began in October of 2016, when the buildings were demolished, and shut down until the construction activities were completed. During construction activities, the CHA Rich Soils Management Plan was followed with special care taken to not disturb existing piping to the system, and soil was monitored with an air monitoring program to evaluate any potential VOC vapors. It is to be noted that only the southern portion of the building where the gift shop and Chinese restaurant were located was demolished. The northern portion of the building where the grocery store and dry cleaner were located was not part of the redevelopment and remains to this date. This Site has been redeveloped containing a CVS drug store who moved in in April of 2017, after the SVE system had been operating.

Since the existing footprint of the building and all the impervious parking lot are also part of the cover to prevent soil gas vapor, the Excavation Work Plan included as Appendix 7, outlines the procedures required to be implemented in the event the impervious surfaces are disturbed. This EWP should be referred to and a location specific workplan submitted under separate cover should redevelopment in the area of the former dry cleaner including the sidewalk in front of the building and the ground cover at the back of the building.

### 3.3.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10.

#### 3.3.2.1. Soil Vapor Extraction System (SVE) System

The Site currently contains a soil vapor extraction (SVE) system that provides vacuum beneath the building to prevent vapor intrusion. According to the Periodic Review Report (PRR) completed in 2013 by AECOM, there is one SVE point, SVE-5, located within the building (in the former dry cleaners) which is active and monitored. As described in the CA Rich report, SVE-1 was originally connected to the system but has since been decommissioned, SVE-2 and SVE-4 have never been connected to the system. The final point, SVE- 3, is located near the Milestone Apartments, away from the CVS, and is also monitored. The figure provided by AECOM in the 2013 PRR, which illustrates the SVE locations, is included as **Appendix 3,** historic documents.

It was reported that at some point the previous consultants took the stripper system offline for the effluent. EL re-opened this connection to the strippers after replacing the carbon to make sure no VOCs were migrating off-site in 2016. EL has depicted the location of the existing layout of the SVE system with respect to the new footprint of the building in **Figure 3B**.

The SVE system will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data indicates that the SVE system may no longer be required, a proposal to discontinue the system will be submitted by the remedial party. Conditions that may warrant discontinuing the SVE system include contaminant concentrations in groundwater and/or soil that: (1) reach levels that are consistently below ambient water quality standards or the site SCGs, as appropriate; (2) have become asymptotic to a low level over an extended period of time, as accepted by the NYSDEC; or (3) the NYSDEC has determined that the SVE system has reached the limit of its effectiveness. This assessment will be based in part on post-remediation contaminant levels in groundwater collected from monitoring wells located throughout the site. Systems will remain in place and operational until permission to discontinue their use is granted in writing by the NYSDEC.

# 4.0 Monitoring and sampling plan

## 4.1 General

This Monitoring and Sampling Plan describes the measures for evaluating the overall performance and effectiveness of the remedy. This Monitoring and Sampling Plan may only be revised with the approval of the NYSDEC. Details regarding the sampling procedures, data quality usability objectives, analytical methods, etc. for all samples collected as part of site management for the site are included in the Quality Assurance Project and Field Activities Plan provided in **Appendix 4**. In addition, all activities will be performed in accordance with the HASP (Appendix 8).

This Monitoring and Sampling Plan describes the methods to be used for:

* Sampling and analysis of all appropriate media (e.g., groundwater, indoor air, soil vapor, soils);
* Assessing compliance with applicable NYSDEC standards, criteria and guidance (SCGs), particularly groundwater standards and Part 375 SCOs for soil; and
* Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment;

To adequately address these issues, this Monitoring and Sampling Plan provides information on:

* Sampling locations, protocol and frequency;
* Information on all designed monitoring systems;
* Analytical sampling program requirements;
* Inspection and maintenance requirements for monitoring wells;
* Monitoring well decommissioning procedures; and
* Annual inspection and periodic certification.

Reporting requirements are provided in **Section 7.0** of this SMP.

## 4.2 Site – wide Inspection

Site-wide inspections will be performed at a minimum of once per year. Modification to the frequency or duration of the inspections will require approval from the NYSDEC. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed as provided in **Appendix 5** – Site Management Forms. The form will compile sufficient information to assess the following:

* Compliance with all ICs, including site usage;
* An evaluation of the condition and continued effectiveness of ECs;
* General site conditions at the time of the inspection;
* The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection; and
* Confirm that site records are up to date.

Inspections of all remedial components installed at the site will be conducted. A comprehensive site-wide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

* Whether ECs continue to perform as designed;
* If these controls continue to be protective of human health and the environment;
* Compliance with requirements of this SMP and the Environmental Easement;
* Achievement of remedial performance criteria; and
* If site records are complete and up to date; and

Inspections will also be performed in the event of an emergency. If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the site, verbal notice to the NYSDEC must be given by noon of the following day. In addition, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the IC/ECs implemented at the site by a qualified environmental professional, as determined by the NYSDEC. Written confirmation must be provided to the NYSDEC within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

## 4.3 Treatment System Monitoring and Sampling

### **4**.3.1 Remedial System Monitoring

Monitoring of the SVE System will be performed on a routine basis, as identified in Table B - Remedial System Monitoring Requirements andSchedule (see below). Modification to the frequency or sampling requirements will require approval from the NYSDEC. A visual inspection of the complete system will be conducted during each monitoring event. Unscheduled inspections and/or sampling may take place when a suspected failure of the SVE system has been reported or an emergency occurs that is deemed likely to affect the operation of the system. SVE system components to be monitored include, but are not limited to, the components included in Table B below.

**Table B – Remedial System Monitoring Requirements and Schedule**

|  |  |
| --- | --- |
| **REMEDIAL COMPONENT** | **SCHEDULE** |
| Compressor | Monthly |
| Vacuum blower | Monthly |
| Individual Well Head | Monthly |
| Effluent | Monthly |
| Moisture Separator | Monthly |
| Influent | Monthly |
| Carbon Units | Monthly |

A complete list of components to be inspected is provided in the Inspection Checklist, provided in *SVE System Operation and Maintenance Manual (Environmental Assessment and Remediation, 2015)* **Appendix 6**. If any equipment readings are not within their specified operation range, any equipment is observed to be malfunctioning or the system is not performing within specifications; maintenance and repair, as per the Operation and Maintenance Plan, is required immediately.

The O&M activities are performed each month that the system is operating and include the collection of operating data such as system pressures and air flow rates, and any additional information required to optimize overall system performance. Maintenance is performed to minimize downtime. During routine site visits, mechanical components are checked and serviced according to the manufacturer’s specifications. Air flow rates and system pressures are measured via flow/pressure indicating gauges where applicable, or using a digital manometer and/or air velocity meter at system sample locations. Concentrations of Volatile Organic Compounds (VOCs) in the system’s air stream (untreated effluent) are monitored monthly using a Photo-Ionization Detector (PID).

Condensate Management

Any and all condensate will be pumped into the 55-gallon steel drum which is stored within the system trailer. The drum will be disposed of in accordance with all applicable regulations.

### 4.3.2 Media Monitoring and SVE System Sampling

Samples shall be collected from the SVE system on a routine basis. Vapor Intrusion sampling of the soil gas and indoor air samples will be collected on an annual basis. Sampling locations, required analytical parameters, and schedule are provided in **Table C** – Remedial System Sampling Requirements and Schedule below.

**Table C –** **SVE Performance and Media Sampling Requirements and Schedule**

|  |  |  |
| --- | --- | --- |
| **Sampling Location** | **Analytical Parameters** | **Schedule** |
| See Figure 3a | VOC (EPA method TO-15) | Annually |
| See Figure 3b | VOC (TO-15) | Quarterly |

Soil vapor sampling will be performed annually to assess the performance of the remedy in the tenant spaces within the building. Soil Gas/Vapor Intrusion samples will be collected from the same locations as proposed in **Figure 3a**,while influent/effluent samples collected from the SVE system on a quarterly basis as depicted in **Figure 3b**. It should be noted that the SVE system shall be temporarily shut-down for six weeks (45 days) prior to sampling to permit sub-slab soil vapors an opportunity to rebound prior to sample collection. Modification to the frequency or sampling requirements will require approval from the NYSDEC.

The analytical data will be used to prepare a report as described in Section 7- Reporting Requirements. Detailed sample collection and analytical procedures and protocols are provided in **Appendix 4- Field Activities Plan/ Quality Assurance Project Plan**.

## 4.4 Post-Remediation Media Monitoring and Sampling

Post-remediation sampling of the SVE system will be performed after the RAO are obtained. NYSDEC approval will be obtained prior to initiating post-remediation activities, and prior to terminating post-remediation monitoring activities to confirm that structures within OU#1 are evaluated. The details of which will be addressed in a workplan report submitted under separate cover. During this period of evaluation, the SVE will be shut-down temporarily in accordance with the specifications outlined in the work plan. The types of samples to be collected will be soil gas/indoor air and spent carbon samples.

All post-remediation sampling activities will be recorded in a field book and associated sampling Indoor Air Quality Forms as provided in **Appendix 5**- Site Management Forms. The sampling log will serve as the inspection form for the monitoring network. Additional detail regarding monitoring and sampling protocols are provided in **Appendix 4**- Field Activities Plan/Quality Assurance Project Plan. Daily activities performed during the course of field activities will be included in the field book. No other media will be sampled. The analytical data will be used to prepare a report as described in **Section 7- Reporting Requirements**.

# 5.0 OPERATION AND MAINTENANCE PLAN

## 5.1 General

This Operation and Maintenance Plan provides a brief description of the measures necessary to operate, monitor and maintain the mechanical components of the remedy selected for the site. This Operation and Maintenance Plan:

* Includes the procedures necessary to allow individuals unfamiliar with the site to operate and maintain the SVE systems;
* Will be updated periodically to reflect changes in site conditions or the manner in which the SVE systems are operated and maintained.

EL is utilizing the *SVE System Operation and Maintenance Manual (Environmental Assessment and Remediation, 2015)*, which is included in **Appendix 6**. A copy of this Operation and Maintenance Manual, along with the complete SMP, is to be maintained at the site. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of this SMP.

## 5.2 SVE System Performance Criteria

The NYSDEC approved an IRM work plan in February of 2009 to address soil vapor contamination identified during the remedial investigation. Pilot tests for the SVE design were conducted in May and June 2009. EAR was selected by NYSDEC to install and initially operate the SVE system. Construction began in July 2011 and was completed in September 2011. Pre-system sampling was conducted in September 2011. The SVE system began operation in November of 2011. As noted in the OU#1 ROD, the remedial action objectives for the Site are:

* Prevent ingestion or direct contact with contaminated soil;
* Prevent inhalation of, or exposure from contaminants volatilizing from soil;
* Prevent migration of contaminants that would result in groundwater or surface water contamination;
* Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain; and
* Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into the buildings on site.

The selected remedy for the Site is No Further Action with the continued operation of the SVE system and the implementation of the ICs/ECs for the Site.

The performance criteria outlined in the “SVE Operation and Maintenance Manual” provided in **Appendix 6** for minimum operating requirements of the various components (eg. Flow, vacuum, temperature, etc.) will be assessed during routine O&M inspections.

## 5.3 Operation and Maintenance of Soil Vapor Extraction System

A description of the operations and maintenance of the SVE system is provided in the cut-sheets and as-built drawings for the SVE system included in **Appendix 6** - Operations and Maintenance Manual. Operation and maintenance (O&M) inspections of the SVE system are conducted by EL in accordance with the procedures in **Operations and Maintenance Manual (See Appendix 6)** and the Health and **Safety Plan (See Appendix 8)**. Included in these inspections are:

* System start-up and testing;
* Routine System Operation and maintenance;
* Non-Routine Operation and Maintenance; and,
* System Monitoring Devices and Alarms.

## 6.0 PERIODIC ASSESSMENTS/EVALUATIONS

## 6.1 Climate Change Vulnerability Assessment

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifting precipitation patterns and wide temperature fluctuation, resulting from global climactic change and instability, have the potential to significantly impact the performance, effectiveness and protectiveness of a given site and associated remedial systems. Vulnerability assessments provide information so that the site and associated remedial systems are prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding.

This section provides a summary of vulnerability assessments that will be conducted for the site during periodic assessments, and briefly summarizes the vulnerability of the site and/or engineering controls to severe storms/weather events and associated flooding. These assessments will be performed after:

* Storms/Wind Effects
* Electrical Surges

## 6.2 Green Remediation Evaluation

NYSDEC’s DER-31 Green Remediation requires that green remediation concepts and techniques be considered during all stages of the remedial program including site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology. This section of the SMP provides a summary of any green remediation evaluations to be completed for the site during site management, and as reported in the Periodic Review Report (PRR). The Green Remediation assessments are proposed to be included in the final SMP, after additional on-site evaluations post-redevelopment have been conducted and include:

* Energy Usage and potential for alternative energy sources (wind/solar) for SVE system

### 6.2.1 Timing of Green Remediation Evaluations

For major remedial system components, green remediation evaluations and corresponding modifications will be undertaken as part of a formal Remedial System Optimization (RSO), or at any time that the Project Manager feels appropriate, e.g. during significant maintenance events or in conjunction with storm recovery activities.

Modifications resulting from green remediation evaluations will be routinely implemented and scheduled to occur during planned/routine operation and maintenance activities. Reporting of these modifications will be presented in the PRR.

### 6.2.2. Remedial Systems

Remedial system will be operated properly considering the current site conditions to conserve materials and resources to the greatest extent possible. Consideration will be given to operating rates and use of reagents and consumables. Spent materials such as spent carbon will be sent for recycling, as appropriate.

### 6.2.3 Building Operations

Structures including buildings and sheds will be operated and maintained to provide for the most efficient operation of the remedy, while minimizing energy, waste generation and water consumption.

### 6.2.4 Frequency of System Checks, Sampling and Other Periodic Activities

Transportation to and from the Site and use of consumables in relation to visiting the Site in order to conduct system checks and or collect samples and shipping samples to a laboratory for analyses have direct and/or inherent energy costs. The schedule and/or means of these periodic activities have been prepared so that these tasks can be accomplished in a manner that does not impact remedy protectiveness but reduces expenditure of energy or resources. A remote access system has been repaired and is now active at the site to perform routine checks on the system via computer. The number of on-site evaluations have been decreased to once per month and whenever an alarm goes off on the system that requires field evaluation.

#### 6.2.5 Metrics and Reporting

As discussed in Section 6.0 and as shown in inspection forms (**Appendix 5**– Site Management Forms), information on SVE energy usage, solid waste generation, transportation and shipping, water usage will be recorded to facilitate and document consistent implementation of green remediation during site management and to identify corresponding benefits; a set of metrics has been developed.

### **6.3 Remedial System Optimization**

A Remedial Site Optimization (RSO) study will be conducted any time that the NYSDEC or the remedial party requests in writing that an in-depth evaluation of the remedy is needed. An RSO may be appropriate if any of the following occur:

* The remedial actions have not met or are not expected to meet RAOs in the time frame estimated in the Decision Document;
* The management and operation of the remedial system is exceeding the estimated costs;
* The remedial system is not performing as expected or as designed;
* Previously unidentified source material may be suspected;
* Plume shift has potentially occurred;
* Site conditions change due to development, change of use, change in groundwater use, etc.;
* There is an anticipated transfer of the site management to another remedial party or agency; and
* A new and applicable remedial technology becomes available.
* Environmental sampling and analysis determines that the contaminants of concern have decreased to below the cleanup criteria.

An RSO will provide a critique of a site’s conceptual model, give a summary of past performance, document current cleanup practices, summarize progress made toward the site’s cleanup goals, gather additional performance or media specific data and information and provide recommendations for improvements to enhance the ability of the present system to reach RAOs or to provide a basis for changing the remedial strategy.

The RSO study will focuses on overall site cleanup strategy, process optimization and management with the intent of identifying impediments to cleanup and improvements to site operations to increase efficiency, cost effectiveness and remedial time frames. Green remediation technology and principals are to be considered when performing the RSO.

If an RSO is performed, which significantly reduces the current SVE system operation, a sampling plan shall be submitted for NYSDEC review and approval to verify that the changes to the SVE do not result in unacceptable conditions for the structures that are under the current scope of protection by the SVE system.

# 7.0. Reporting rEQUIREMENTS

## 7.1 Site Management Reports

All site management inspection, maintenance and monitoring events will be recorded on the appropriate site management forms provided in **Appendix 5**. These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of Table D and summarized in the Periodic Review Report.

**Table D:** **Schedule of Interim Monitoring/Inspection Reports**

|  |  |
| --- | --- |
| Description of Task | **Proposed Date** |
| Exhaust Sampling | Quarterly |
| Indoor Air Sampling/Sub-/Slab Soil Gas Sampling | Annually |
| Reporting for O&M Monitoring and Inspection Reports | Quarterly/Annually |
| Periodic Review Report & Annual Site-wide Inspection Report | December |
|  |  |

\* The frequency of events will be conducted as specified until otherwise approved by the NYSDEC.

All interim monitoring/inspections reports will include, at a minimum:

* Date of event or reporting period;
* Name, company, and position of person(s);
* Conducting monitoring/inspection activities;
* Description of the activities performed;
* Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet);
* Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air, etc);
* Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
* Sampling results in comparison to appropriate standards/criteria;
* A figure illustrating sample type and sampling locations;
* Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);
* Any observations, conclusions, or recommendations; and
* A determination as to whether contaminant conditions have changed since the last reporting event.

Routine maintenance event reporting forms will include, at a minimum:

* Date of event;
* Name, company, and position of person(s) conducting maintenance activities;
* Description of maintenance activities performed;
* Any modifications to the system;
* Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and,
* Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

Non-routine maintenance event reporting forms will include, at a minimum:

* Date of event;
* Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
* Description of non-routine activities performed;
* Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and
* Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

Data will be reported in digital format as determined by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQuISTM database in accordance with the requirements found at this link http://www.dec.ny.gov/chemical/62440.html.

## 7.2 Periodic Review Report

A Periodic Review Report (PRR) will be submitted to the Department beginning sixteen (16) months after the approval of the SMP by the Department is issued. After submittal of the initial Periodic Review Report, the next PRR shall be submitted annually to the Department or at another frequency as may be required by the Department. In the event that the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site described in the OU#1 ROD. The report will be prepared in accordance with NYSDEC’s DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also be incorporated into the Periodic Review Report. The report will include:

* Identification, assessment and certification of all ECs/ICs required by the remedy for the site.
* Results of the required annual site inspections and severe condition inspections, if applicable.
* All applicable site management forms and other records generated for the site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.
* A summary of any discharge monitoring data and/or information generated during the reporting period, with comments and conclusions.
* Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor, etc.), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends.
* Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted in digital format as determined by the NYSDEC. Currently, data is supplied electronically and submitted to the NYSDEC EQuISTM database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.
* A site evaluation, which includes the following:
  + The compliance of the remedy with the requirements of the site-specific RAWP, ROD or Decision Document;
  + The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
  + Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring and Sampling Plan for the media being monitored;
  + Recommendations regarding any necessary changes to the remedy and/or Monitoring and Sampling Plan; and
  + Trends in contaminant levels in the affected media will be evaluated to determine if the remedy continues to be effective in achieving remedial goals as specified by the Decision Document.
  + The overall performance and effectiveness of the remedy.
* A performance summary for all treatment systems at the site during the calendar year, including information such as:
  + The number of days the system operated for the reporting period;
  + The average, high, and low flows per day;
  + The contaminant mass removed;
* A description of breakdowns and/or repairs along with an explanation for any significant downtime;
* A description of the resolution of performance problems;
* Alarm conditions;
* Trends in equipment failure;
* A summary of the performance, effluent and/or effectiveness monitoring; and
* Comments, conclusions, and recommendations based on data evaluation.

### 7.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a Professional Engineer licensed to practice in New York State will prepare, and include in the Periodic Review Report, the following certification as per the requirements of NYSDEC DER-10:

“*For each institutional or engineering control identified for the site, I certify that all of the following statements are true:*

* *The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;*
* *The institutional control and/or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the Department;*
* *Nothing has occurred that would impair the ability of the control to protect the public health and environment;*
* *Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;*
* *Access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;*
* *Use of the site is compliant with the environmental easement;*
* *The engineering control systems are performing as designed and are effective.*

At the end of each certifying period, as determined by the NYSDEC, the following certification will be provided to 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, Thomas Andrews, of 11 Princess Road, Lawrenceville, New Jersey, am certifying as Owner’s Designated Site Representative]: and I have been authorized and designated by all site owners to sign this certification for the site.”*

The signed certification will be included in the Periodic Review Report.

The Periodic Review Report will be submitted, in electronic format, to the NYSDEC Central Office, Regional Office in which the site is located and the NYSDOH Bureau of Environmental Exposure Investigation. The Periodic Review Report may need to be submitted in hard-copy format, as requested by the NYSDEC project manager.

## 7.3 Corrective Measures Work Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, a Corrective Measures Work Plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the Corrective Measures Work Plan until it has been approved by the NYSDEC.

## 7.4 Remedial Site Optimization Report

In the event that an RSO is to be performed (see Section 6.3, upon completion of an RSO, an RSO report must be submitted to the Department for approval. The RSO report will document the research/ investigation and data gathering that was conducted, evaluate the results and facts obtained, present a revised conceptual site model and present recommendations. RSO recommendations are to be implemented upon approval from the NYSDEC. Additional work plans, design documents, HASPs etc., may still be required to implement the recommendations, based upon the actions that need to be taken. A final engineering report and update to the SMP may also be required.

The RSO report will be submitted, in electronic format, to the NYSDEC Central Office, Regional Office in which the site is located, Site Control and the NYSDOH Bureau of Environmental Exposure Investigation.

# 8.0 REFERENCES

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