City of New York
Parks & Recreation

Adrian Benepe
Commissioner

The Arsenal
Central Park
New York, New York 10065

Capital Projects

Olmsted Center
Flushing Meadows Corona Park
Flushing, New York 11368

Thérèse Braddick
Deputy Commissioner

John J. Natoli, P.E., Chief Engineer
(718) 760-6725/john.natoli@parks.nyc.gov

Ms. Ioana Munteanu-Ramnic, P.E.
Environmental Engineer
NYS-DEC-Region 2
1 Hunter's Point Plaza
47-40 21st Street
Long Island City, NY 11101

July 21, 2011

Re: **PERIODIC REVIEW REPORT FOR 3/16/10 TO 3/16/11 – SITE NO. V00406**
ELMHURST PARK, QUEENS BOROUGH

Dear Ms. Munteanu-Ramnic,

The New York City Department of Parks & Recreation (DPR) hereby provides the New York State Department of Environmental Conservation (DEC) with information concerning the Elmhurst Park site in Queens as we have been doing for the last two years. Per the Site Management Plan for the Newtown/Elmhurst Former Gas Holder Site, DPR provides this report on an annual basis. Four attachments are described as follows.

Attachment 1 – Site Management Periodic Review Report Notice / Institutional and Engineering Controls Certification Form

Attachment 2 – Periodic Review Report - June 2011

Attachment 3 - Field Inspection Form – Elmhurst Gas Tank Park

Attachment 4 – Procedural Plan for William Gross Construction Associates, Inc. – Elmhurst Gas Tank Park Site

Please call me at (718) 760-6922 should you have any questions.

Sincerely,

Marty Rowland, Ph.D., P.E.
Senior Project Manager for Site Remediation
New York City Department of Parks & Recreation
Capital Projects Division

cc: Helen Ogrinz, NYC-DPR Project Manager

Attachment 1

Site Management Periodic Review Report Notice / Institutional and Engineering Controls Certification Form

Enclosure 1

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form

Site Details **Box 1**

Site No. V00406

Site Name Newtown/Elmhurst Former Gas Holder

Site Address: 78-01 57th Avenue Zip Code: 11373
City/Town: Elmhurst
County: Queens
Site Acreage: 6.0

Reporting Period: March 16, 2010 to March 16, 2011

	YES	NO
1. Is the information above correct?	☑	☐
If NO, include handwritten above or on a separate sheet.		
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	☑
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	☐	☑
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	☑
If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.		
5. Is the site currently undergoing development?	☐	☑

Box 2

	YES	NO
6. Is the current site use consistent with the use(s) listed below? Restricted-Residential, Commercial, and Industrial	☑	☐
7. Are all ICs/ECs in place and functioning as designed?	☑	☐

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

7/26/11
Date

SITE NO. V00406

Box 3

Description of Institutional Controls

Parcel	Owner	Institutional Control
28050031	City of New York Parks and Recreation	Landuse Restriction Soil Management Plan
2806-1	City of New York Parks and Recreation	Ground Water Use Restriction Landuse Restriction Soil Management Plan

Box 4

Description of Engineering Controls

Parcel	Engineering Control
28050031	Cover System
2806-1	Cover System

Control Description for Site No. V00406

Parcel: 28050031

The Controlled Property shall not be used for a less restrictive use than restricted-residential. Restricted-residential includes active recreational uses i.e. parkland.

Vegetable gardens and farming are prohibited.

The owner must operate and maintain all engineering controls as specified in the Site Management Plan.

The owner must cause all engineering controls on the Controlled Property to be inspected and certified at a frequency and in a manner as specified in the Site Management Plan.

The owner must cause all data and information pertinent to management of the Controlled Property to be reported at the frequency and in the manner defined in the Site Management Plan.

All future activities on the Controlled Property that will disturb residual contaminated material remaining under the soil cover system (consisting of at least two feet of clean imported soils and concrete building slabs) are prohibited unless such activities are conducted in accordance with the soil and piping management provisions in the Site Management Plan.

The use of the groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for the intended purpose.

Control Description for Site No. V00406

Parcel: 2806-1

The Controlled Property shall not be used for a less restrictive use than restricted-residential. Restricted-residential includes active recreational uses i.e. parkland.

Vegetable gardens and farming are prohibited.

The owner must operate and maintain all engineering controls as specified in the Site Management Plan.

The owner must cause all engineering controls on the Controlled Property to be inspected and certified at a frequency and in a manner as specified in the Site Management Plan.

The owner must cause all data and information pertinent to management of the Controlled Property to be reported at the frequency and in the manner defined in the Site Management Plan.

All future activities on the Controlled Property that will disturb residual contaminated material remaining under the soil cover system (consisting of at least two feet of clean imported soils and concrete building slabs) are prohibited unless such activities are conducted in accordance with the soil and piping management provisions in the Site Management Plan.

The use of the groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for the intended purpose.

Box 5

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

   a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

   b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

YES	NO
☑	☐

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

   (a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

   (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

   (c) 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;

   (d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

   (e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES	NO
☑	☐

IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

7/26/11
Date

IC CERTIFICATIONS
SITE NO. V00406

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 2 and/or 3 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 _____ at NYC Dept of Parks & Recreation 117-02 Roosevelt Ave Flushing, NY 11368,
print name print business address

am certifying as _____(Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

_____ 7/26/11
Signature of Owner or Remedial Party Rendering Certification Date

IC/EC CERTIFICATIONS

Box 7

Professional Engineer Signature

I certify that all information in Boxes 4 and 5 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 Martin A. Rowland at NYC Dept of Parks & Recreation 117-02 Roosevelt Ave, Flushing, NY 11368,
print name print business address

am certifying as a Professional Engineer for the NYC Dept of Parks & Recreation
(Owner or Remedial Party)

STATE OF NEW YORK ★ MARTIN A ROWLAND ★ LICENSED PROFESSIONAL ENGINEER 087568

_____ _____ 7/18/11
Signature of Professional Engineer, for the Owner or Remedial Party, Rendering Certification Stamp (Required for PE) Date

Attachment 2

Periodic Review Report – June 2011

Periodic Review Report - June 2011

Site No. V00406
Site Name: Gas holder Site
Site Address: 78-01 57th Avenue 11373
Elmhurst, Queens

I. Introduction

Site Location

Elmhurst Park is located between 57th Avenue and Grand avenue opposite 79th street in the Borough of Queens. The site is bordered on one west by a CSX freight rail line. A Verizon facility with truck parking and residential rear yards border the park on the East.

Summary of remedial and site history

The Site was remediated by KeySpan energy, the former property owner, in accordance with the Voluntary Cleanup agreement (VCA) Index# D2-0002-99-10 which was issued in 2000. This VCA required KeySpan to investigate and remediate contaminated media, which was defined as soil and groundwater at the Newtown Holders Tank Site.

The land was transferred to the City of New York for use as a park. In October 2007 City of New York Parks Prepared a Site Management Plan (SMP) This SMP has been approved by New York State Department of Environmental Conservation (NYSDEC) in accordance with the requirements in NYSDEC Draft DER-10 Technical guidance for Site Investigation and Remediation, Dated December 2002 and the guidelines provided by NYSDEC. This SMP was prepared to manage residual contamination remaining at the site in perpetuity by providing a process for oversight of Institutional Controls (IC) and Engineering Controls (EC) and for regular reporting of the effectiveness of these controls in Periodic Review Reports (PRRs).

Site Institutional Controls (IC):
Land use Restriction (Restricted residential uses including Parkland)
Soil Management Plan
Groundwater Use Restriction

Engineering Control (EC):
Cover System

City of New York Parks completed construction of the first Phase of Park development in October 2008. The first PRR followed this construction in early 2009. The site with the cover complete and fully covered in lawn remained

closed to the public. In October 2009 Phase two of park construction started. The phase two work is nearly complete. The third phase began in June 2011 and is expected to be complete in June 2012.

Compliance and Recommendations

Institutional controls compliance during reporting period

The site development as a park is in compliance with the restricted residential use Land use restriction and Groundwater restriction. All construction work was and continues in compliance with the Soil and Pipe Management Plan of the site management plan.

Engineering control compliance during reporting period

Phase two includes constructing the playground and building foundation, installing pavements, site furniture and additional trees, shrubs and groundcovers. Additional fill is added to the hill to make it higher for winter sledding. The construction is aprox 90% complete. All construction work was and continues in compliance with the Soil and Pipe Management Plan of the Site management Plan (SMP). No contamination was detected during all construction to date. Phase two was/is constructed according to a the Procedural plan prepared for Parks by Shapiro Engineering. (copy attached). Following completion of Phase two Shapiro Engineering will prepare for Parks a final report. The Engineering Control, the cover (2' of clean fill) is complete and intact. There is a minimum two feet of clean fill over the entire site. Many areas of the site have significantly more cover.

Recommendation

Following completion of all phases of construction Parks recommends an evaluation be conducted to determine if the requirements for discontinuing site management have been met for a portion or the entire site. There are significant areas of the park where the cover far exceeds 2'.

Monitoring Plan compliance

All construction work during the reporting period and continuing is in compliance with the Soil and Pipe Management Plan of the Site management Plan (SMP). Specific measures are outlined in a procedural plan prepared for Parks by Shapiro Engineering. (Attachment 4 of this PRR). No contamination was detected during all construction to date. The Engineering control- 2' of cover is intact.

Attachment 3

Field Inspection Report Form – Elmhurst Gas Tank Park Site

Supplemental Sheet

Field Inspection Form – Elmhurst Gas Tank Park

Periodic Review of IC / EC Elements*

Inspection Date (month/day/year): Su M T W (Th) F Sa 3 / 10 / 11

Inspection Time: 13 : 00 Inspector Name: Martin Rowland

	acceptable	unacceptable**
Institutional Controls (IC) [restrictions]		
1. Active recreational uses allowed *(as well as passive and nature-based uses)*	☑	☐
2. Prohibition of vegetable gardens / farming	☑	☐
3 Prohibition of groundwater use	☑	☐
4. Prohibition against disturbing covered, contaminated soils	☑	☐
Engineering Controls (EC)		
5. Soil cover system – at least 2 feet of clean, imported soils and / or concrete building slabs; no subsidence, potholes, or cracked slabs	☑	☐

** why unacceptable (identify by nos. 1-5): _____

Final touches on park; no additional soil disturbance required

MR

* as described in the October 2007 Elmhurst Gas Tank Park Site Management Plan, DEC Site # V00-406

Attachment 4

Procedural Plan for William A. Gross Construction Associates, Inc.
Elmhurst Gas Tank Park Site

PROCEDURAL PLAN
FOR
WILLIAM A. GROSS CONSTRUCTION
ASSOCIATES, INC.
at the
NEW YORK CITY DEPARTMENT OF
PARKS AND RECREATION
CONTRACT #Q 492-107M
ELMHURST GAS TANK PARK SITE
57TH AVENUE
ELMHURST, NY 11373

CITY OF NEW YORK - PARKS & REC.
CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS IN THE FIELD. HE SHALL COORDINATE ALL WORK SHOWN ON THIS ORIG. WITH THAT OF THE OTHER CONSULTANTS, SUBCONTRACTORS & TRADES. APPROVAL DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR FULL COMPLIANCE WITH CONTRACT DRAWINGS.
CONTRACT NO: Q492-107M

APPROVED		CONTRACTOR	
DISAPPROVED		CONSTR. DIV. FIELD	
REVISE & RESUBMIT		DESIGN DIV.	X
APPROVED as noted	X	MAP FILE	
CHECKED BY: HOB		APPROVED BY	
DATE: 10/13/09		DATE:	

PREPARED BY:

SHAPIRO ENGINEERING, P.C.
CONSULTING ENGINEERS
181 SOUTH FRANKLIN AVENUE, SUITE 305
VALLEY STREAM, NEW YORK 11581
516 791-2300
FAX: 516 791-0782
E-MAIL: shapiroengineers@att.net

STATE OF NEW YORK
ROBERT A. LO PINTO
No. 053312
LICENSED PROFESSIONAL ENGINEER

ROBERT A. LO PINTO, P.E.

09-40

C (2009)

JULY 29, 2009

PROCEDURAL PLAN

TABLE OF CONTENTS

APPENDICES

1. GENERAL

This document is prepared as a requirement for fulfillment of invasive activities during the second phase of construction, including elimination of potential residual contamination and excavation, storage, handling, and disposal of unregulated and regulated material removed from the excavation at Elmhurst Gas Tank Park (hereafter referred to as the "Site"). The Site underwent Interim Remedial Action in May 2001 in accordance with the Voluntary Cleanup Agreement (VCA) Index# D2-0002-99-10, Site # V00406, which was issued in October 2000 under the New York State (NYS) Voluntary Cleanup Program (VCP) administered by New York State Department of Environmental Conservation (NYSDEC). In addition, it was remediated during Phase I construction activities in 2007 – 2008.

Currently, there is at least 2 feet of clean top soil as a cover layer throughout the entire Site. During invasive activities some capped contaminants may be encountered. This Plan describes the procedures to be followed to excavate and dispose of contaminated soil (if any), in order to reduce the level of contaminants to an acceptable level, to protect human health and safety during excavation and construction activities performed within the property controlled by the Deed Restriction issued on August 27, 2007. In addition to these procedures, all health and safety control procedures presented in the Health and Safety Plan are to be followed.

2. SITE DESCRIPTION

KeySpan Energy Corporation entered a VCA with the NYSDEC on October 24, 2000 to develop a 6.1-acre property known as the Newtown Station/ Elmhurst Holder Tank Site, located in Elmhurst, Queens County, New York. The property was used as a gas storage and transfer facility until 1993 when the holder tanks were decommissioned. This VCA required KeySpan to investigate and remediate contaminated media, which at that time was defined as soil and groundwater at the Newtown Holders Tank Site.

The property includes the following two parcels: Block 2805/Lot 31 is the larger parcel of the overall site and included the two gas holder tanks until 1993. Tanks were located in the northern and central portion of the Site and occupied approximately 3 acres of an about 5.4-acre Tax Lot. Two prefabricated hazardous waste storage sheds were located on-site along the western property boundary. These sheds have been removed. Block 2806/ Lot 1, which is about 0.7 acres in area, is a smaller parcel of land adjacent to Grand Avenue, on the northern portion of the property.

The surrounding area is primarily urban and land use is mostly residential with some industrial and commercial areas. Commercial development consisting of neighborhood stores exists to the immediate north side of Grand Avenue and the "backyard" areas of attached single-family residential units are located immediately east of the site along the northern portion of 80th Street. The Long Island Expressway is to the south, across

57th Avenue. CSX Rail Road tracks are located at the property stretched along the western property line.

The site investigation, initiated in October 2000, revealed presence of lead-based paint chips, polycyclic aromatic hydrocarbons (PAH), PCBs, pesticides, volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) both at the surface and in subsurface soil, which can pose a risk to human health and the environment. This discovery served as the basis for the remedial activities, in order to mitigate threats to human health and the environment for the site's proposed use.

The Interim Remedial Action, initiated at the site in 2001, helped to reduce levels of soil contamination both qualitatively and quantitatively, due to excavation and removal of the contaminated soil and replacing it with clean fill. However, the 2006 sampling results indicated that there are still several locations of residual contamination, with elevated levels of SVOCs and lead, exceeding the NYSDEC cleanup goals of 0.0672 ppm and 400 mg/kg, respectively. These areas were continuously monitored during Phase I construction activities in 2007-2008. Characterization samples and endpoint samples were taken at the excavations within the areas of concern. All samples were analyzed for total lead (EPA Method 6020) and total SVOCs (EPA Method 8270) by the Long Island Analytical Laboratories, Inc., an Environmental Lab approved by the New York State Department of Health (NYSDOH) under the Environmental Laboratory Approval Program. The analytical methods were in compliance with NYSDEC and NYSDOH rules and regulations governing hazardous materials. Therefore, no additional excavation was recommended. No material was considered contaminated Category 2 material to be transported and disposed of. It was recommended to reuse excavated soil as backfill material at the same locations. The soil barrier was placed at the bottom of the excavations to indicate possible contamination for future invasive activities. It was also recommended to place plastic sheeting at the bottom of the excavation adjacent to the areas of concern. At least two feet of clean fill were placed in the excavated areas, and the surface was re-graded based on the project grade conditions.

Based on the summary of the investigation and sampling conducted in 2006, it is not anticipated to encounter any grossly contaminated soil during Phase II construction and on-site invasive activities. The construction of a playground and a comfort station do not envisage excavation deeper than seven (7) to ten (10) feet for the foundation installation and utilities connection. Mainly, all the areas of concern, with elevated levels of lead and SVOCs, lay beyond the proposed excavation area. Only one area with elevated level of SVOCs falls within the Phase II excavation zone (see SEPC dwg. 09-40-1 – Phase II Site Plan). However, the 2006 investigation indicated residual contamination at 15-foot depth below then existing grade level, which was elevated during the Phase I construction. The soil sampling conducted during Phase I construction activities, taken from approximately eight (8) feet of depth, did not reveal any contamination.

The Phase II construction will also include the installation of swings, sitting areas, paths, site lighting and security, a decorative and interactive spray fountain, fencing, and additional plantings.

3. EQUIPMENT

The contractor will ensure that all equipment required for the specific task, and all health and safety equipment is on site each work day. Properly sized equipment will be used for the required tasks.

4 PROCEDURES

4.1 Excavation

Before the commencement of any excavation activities, the Contractor shall furnish and install an eight (8)-foot high chain link construction fence and gates in accordance with the Contract plans, specifications, and as directed by the Resident Engineer (RE). The Contractor shall furnish, erect, and maintain a Construction Sign in accordance with the Contract plans and specifications.

The excavation and disposal of lead and SVOC-impacted soil from the former natural gas holder area in 2001 has removed the majority of the contaminants of concern. In addition, during 2007-2008 Phase I construction, all soil excavated within the areas of residual contamination specified by 2006 sampling, was reused at the same locations, since continuous monitoring and sampling results confirmed that the excavated soil met the site-specific cleanup objectives. At least two feet of clean fill was placed in the excavated areas, and the surface was re-graded based on the project grade conditions. It is not anticipated that Phase II invasive activities will reveal any new pockets of grossly contaminated material within proposed excavation areas. However, if any capped contaminated soil is incidentally encountered during excavation it will be excavated, stockpiled, tested, and properly disposed of in conformance with the NYSDEC regulations and requirements. It is not anticipated that groundwater will be encountered in any of the excavations. However, if dewatering is required, the Contractor will perform water quality test that will also be sent to an approved lab.

Excavation activities shall be conducted as follows:

- Exclusion zones (EZ) will be established in the vicinity of the "hot spot" areas, disclosed by 2006 investigation, if the depth of the proposed excavation exceeds the specified depth of the residual contamination. The EZs will be maintained in accordance with OSHA, 29 CFR 1910.120.

- Contractors shall comply with rules and regulations regarding working in confined spaces and local, state and federal rules as described in the HASP.

- Where the depth of excavation exceeds five (5) feet, sheeting and necessary bracing must be installed for the entire depth below the existing ground surface.

- Following removal of cut portions of the existing concrete pavements, foundation walls or slabs, the Environmental Monitor will inspect the exposed sub-slab soil for visual evidence of impacts. In addition, the exposed soil will be screened for total organic vapors using a photoionization detector (PID) on an approximate 10 feet by 10 feet grid or at 10-foot intervals for linear cuts/excavations. Excavation may proceed if no unusual conditions are encountered and if the soil is not materially different from the typical soil/fill found previously on the Site.

- During excavation, soil will be continuously inspected for chemical or petroleum odors or staining, and field screened with a PID. The PID readings will be obtained either from soil contained within the excavator bucket and/or directly off the excavation sidewalls or bottom. The excavated material will be handled based on the results of this screening. Any material exhibiting significant PID readings will be excavated and stockpiled on plastic poly sheeting and covered until waste characterization analysis can be completed.

- Open excavations will be covered and protected from rain and stormwater pending backfilling and/or receipt of analytical data, as necessary.

- The excavation will be backfilled with the excavated material if it did not exhibit any contamination during visual and PID screening and did not appear to be materially different (i.e., visual staining or odors) from the typical soil/fill found previously on the Site. If the excavated soil was deemed contaminated, the excavation will be backfilled with soil from a pre-approved source as directed by the RE.

- Completed excavations will be surveyed for mapping and quantification of soil volume removed.

- All excavated areas at the Site will be restored in compliance with cover requirements.

The work will be performed in accordance with a written Health & Safety Plan for on-site workers. Community Air monitoring consistent with the NYSDOH Generic Community Air Monitoring Protocol (CAMP) will be implemented. Real-time monitoring for organic vapors and particulates will be performed upwind and downwind of each excavation area.

4.2 Detailed Procedures

1. Within areas of cut and fill (except tree protection zones), topsoil will be stripped to a depth of approximately five (5) inches and stockpiled to be reused prior to grading operations. Topsoil will not be used as fill or backfill material within structure or earthen dam limits, or under paved areas.

2. The Exclusion, Contamination Reduction, and Support Zones will be established in the vicinity of the "hot spot" areas, disclosed by 2006 investigation, if the depth of the proposed excavation exceeds a specified depth of the residual contamination. Level of the personal protection in each zone will comply with PPE specified in the Health and Safety Plan (a copy will be available on-site at all times). As an example, Level B respiratory protection and Level C skin and eye protection may be required for a project due to specific contaminants and/or concentrations within the Exclusion Zone.

3. Excavation activities will continue at the next designated excavation work zone in an uninterrupted manner.

4. Excavation Contractor will provide sheeting and bracing around the interior perimeter of the excavation, as needed, as per OSHA Requirements 29CFR1926.

5. Sheeting and bracing will be installed, as needed/required, to prevent cave-ins of the unexcavated soil. When the depth of excavation exceeds five (5) feet, sheeting and necessary bracing must be installed for the entire depth below the existing ground surface.

6. Precautions will be taken when installing sheeting and bracing (if necessary) in the proximity of any existing structure not to place any lateral load on grade beam (if any) or on an exterior wall.

7. Excavation will not be performed below the bottom of any footings.

8. Levels of the pollutants of concern will be continuously monitored and recorded in the excavations within work zones by Environmental Monitor.

9. Contractor will have soil samples collected and laboratory tests conducted only upon issuance of work orders by the RE.

10. If contaminated soil is incidentally encountered, it will be stockpiled and tested in accordance with applicable regulations and requirements, as directed by the RE. The

stored soil will be placed onto double layers of a minimum 8-mil liner and kept covered with plastic.

11. As the contaminated soil (if any) is accumulated, it will be shipped out for proper disposal. Testing, as required by the Transporter or Disposal facility, will be performed.

12. If capped pockets of gross contamination are encountered, prior to filling the excavated area with clean fill, a soil barrier will be installed at the bottom of the excavation to provide indication of possible contamination for future invasive activities.

13. Excavated soil that did not exhibit any contamination will be temporarily stockpiled and reused at the same locations as backfill.

14. At least 2 feet of clean fill will be placed in the excavated areas, and the surface will be returned to the proposed grade conditions (see SEPC dwg. 09-40-2).

4.3 Stockpiling

During Phase II construction, the Contractor will identify the location of stockpiles for excavated material that did not exhibit any contamination during visual inspections (i.e. staining or odors) or PID screening. Such locations shall not interfere with the work on-site.

Any soil/fill excavated during invasive work that registers PID readings above 5 parts per million (ppm) and deemed grossly contaminated or materially different from the typical soil/fill found previously on the Site will be temporarily staged within a Staging Area (see SEPC dwg. 09-40-1) in prepared stockpiles prior to off-site disposal. The impacted soil will be removed to the extent required for development, maintenance, and or redevelopment, and post-excavation soil samples will be collected in accordance with DER-10 requirements, as directed by the RE. Excavated material will be neatly stored and divided into stockpiles, each consisting of approximately 250 cubic yards. Stockpiled soil will be lined, sloped, bermed, covered, and secured. The stockpiles will remain undisturbed for as long as necessary for the Contractor to complete the required laboratory testing. Although these conditions are not anticipated, if they do occur, they would be expected to involve small quantities, and any invasive work would be conducted only as needed.

- Stockpile areas will meet the following minimum requirements:
    - The excavated soil will be placed onto double layers of a minimum 8-mil low-permeability liner of sufficient strength and thickness to prevent puncture during use.
    - Equipment and procedures will be used to place and remove the soil that will minimize the potential to jeopardize the integrity of the liner.

- Active stockpiles will be covered at the end of each workday with minimum 8-mil plastic sheeting or waterproof tarps that will be securely anchored to the ground. Stockpiles will be routinely inspected and broken sheeting covers will be promptly replaced.

- Stockpiles will be covered until ready for backfilling or loading for disposal. Each pile will be staked and labeled with a number to coincide with labeling on the associated sample container for proper correlation of the analytical results to the pile.

- For outdoor stockpiles, each stockpile area will be encircled with silt fences and hay bales, as needed, to contain and filter particulates from any rainwater that has drained off the soil, and to mitigate the potential for surface water run-on. The stockpile areas will be sloped wherever possible and equipped with a sump to collect any rainwater that has drained off the stockpiled soil. Drained water will be removed from the sump, as required.

- The stockpile areas will be inspected daily and noted deficiencies will be promptly addressed.

4.4 Characterization Sampling

Since the Site was remediated, it is expected that all material excavated during Phase II activities may be reused at the same locations as backfill material. It is not anticipated that Phase II invasive activities will reveal any new pockets of grossly contaminated material within proposed excavation areas. However, if any capped contaminated soil is incidentally encountered during excavation it will be excavated, stockpiled, tested, and properly disposed of in conformance with the NYSDEC regulations and requirements. The Contractor shall have laboratory tests conducted only upon issuance of work orders from the RE.

For sample analyses (if any), the Contractor will use the Long Island Analytical Laboratories, Inc. located at 110 Colin Drive, Holbrook, NY 11741, approved by the New York State Department of Health (NYSDOH) under the Environmental Laboratory Approval Program. Copies of relevant certificates and qualifications of the testing laboratory are presented in Appendix "B".

In general, there are two major categories of material that may be encountered during invasive work:

Category 1 - Contaminated Fill – Portions of the shallow fill at the Site may contain non-hazardous contaminated materials that do not exhibit gross contamination (i.e. obvious by visual, olfactory or PID examination) and

Category 2 - Other Contaminated Soil/Fill – Possible grossly contaminated localized areas of soil different from Category 1 that will be excavated and transported to a dedicated stockpile area for characterization and waste classification, followed by loading, transport and disposal at an approved facility based on analytical results.

Laboratory tests for characterization of a waste stream typically include all or a subset of the following list. The actual testing will be determined by the disposal facility's permit requirements.

- Total petroleum hydrocarbons (TPHs);
- Total VOCs, Method 8260;
- Total SVOCs, Method 8270;
- Total PCBs, Method 8082;
- Total metals (14), Method 6010B;
- Ignitability, corrosivity, and reactivity;
- Toxic Characteristics Leaching Procedure (TCLP) VOCs, SVOCs, metals and pesticides and herbicides; and
- Diesel Range Organics (DRO) and Gasoline Range Organics (GRO).

Characterization samples collected will be submitted to an ELAP-approved laboratory for analysis. Analytical reports will be maintained and copies will be available for inspection in the field. All appropriate field and laboratory Quality Assurance (QA) procedures (e.g., sample shipment and custody) will be maintained, with the exception that field duplicate, rinse blank, and matrix spike/matrix spike duplicate samples will not be collected for waste characterization samples. Samples will be collected using standard sampling tools (such as spatulas or small shovels) into clean, laboratory-supplied glassware. Sampling personnel will don the appropriate PPE as per the HASP.

If pockets of capped contaminated material are encountered, verification composite samples will be collected from the bottom and 4 sidewalls of the excavation and sent to the NYSDOH approved lab for analysis upon completion of each excavation. All composite samples will be properly homogenized in preparation for analysis prior to transfer to laboratory glassware.

Laboratory duplicate samples will be collected at a rate of 1 per 20. All samples will be analyzed, as a minimum, for total lead (EPA Method 6020) and SVOCs (EPA Method 8270) at an off-site New York DOH CLP lab capable of meeting the project logistical constrains. Draft analytical data should be available within 72 hours of laboratory receipt to allow for prompt execution of construction. To prevent any cross-

contamination of samples, all sampling equipment will be cleaned and decontaminated after each sampling.

Excavation will remain open until analytical results, compared against the 6 NYCRR Part 375 Regulatory Soil Standards provided in Appendix "A", have been received. In case of exceedances, additional iterations of excavation and sampling may be conducted as directed by the RE, until the cleanup goals are achieved and/or the site development features preclude the need for additional removals. All laboratory tests will be conducted only upon issuance of work orders from the NYSDPR Engineer.

The analytical methods shall be in compliance with NYSDEC and NYSDOH rules and regulations governing hazardous materials. In addition, testing procedures shall also conform to latest ASTM standards, NYC Building codes, and Federal Register Parts II and V wherever possible.

4.5 Off-Site Disposal

The Contractor will be responsible for handling of all material removed from the Site and transporting it to a proper disposal facility, as regulated waste or unregulated waste, as applicable.

All soil/fill and solid waste excavated for incidentally encountered hot spots (if any) will be handled, transported and disposed in accordance with applicable Part 360 regulations and other applicable local, state and federal regulations. The proposed disposal facility(ies) will be reviewed and approved with NYCDPR before any material leaves the site. Soil that does not meet the Part 375 regulatory standards will not be taken to a recycling facility. Non-hazardous contaminated soil and hazardous waste (if any) will be transported off the Site for disposal.

The NYSDEC, in conjunction with the NYC Department of Parks and Recreation (DPR), shall have the discretion to modify the procedures of the October 2007 DPR Soil Management Plan that are specifically related to waste characterization procedures (i.e., sampling in-situ versus stockpiled material) and the selection of the end use/disposal options for material to be removed from the site.

4.5.1 Disposal Facility

The Contractor intends to use the following disposal facilities:

1. Clean Earth of North Jersey, Inc., located at 105 Jacobs Avenue, Kearny, NJ 07032, Permit #0907N1HP13;
2. Clean Earth of Carteret, located at 24 Middlesex Avenue, Carteret, NJ 07008, Permit #CBG060003;
3. Clean Earth of Philadelphia, Inc., located at 3201 South 61st St., Philadelphia, PA 19153, Permit #301220; and

Copies of the current, valid operating permits from the applicable regulatory agencies, written commitments from disposal facilities to accept the material throughout the life of the contract, and a listing of the number and types of analytical tests required for initial determination of the material for each disposal facility are provided in Appendix "C". These documents will be provided to the NYSDEC, as required.

4.5.2 Transportation

The Contractor will oversee the load-out of all excavated material (if any grossly contaminated material is discovered). Once the loading of any container, dump truck, or trailer has been completed, the material will be immediately transported to the approved off-site disposal and/or recycling facility.

All transport of material will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations. Any transporter of contaminated/ hazardous soils shall be licensed in the state, in which handling and transportation will take place, in accordance with all applicable regulations. Copies of NYSDEC permits are presented in Appendix "D".

The Contractor will ensure an appropriate measurement of unit quantity of material removed from the Site, will coordinate vehicle inspection and recording of quantities leaving the Site to coincide with the reported quantities of the material received at the disposal site. The Contractor will obtain and submit copies of each manifest for each container, truck, or trailer. Each manifest shall include the following information:

- Waste stream source and surface location description;
- Truck license plate number;
- Trailer license plate number;
- Container number;
- Contractor's name, address, contact person, and phone number;
- Transporter's name, address, contact person, and phone number;
- Printed name and signature of the Contractor and date that the load was completed;
- Printed name and signature of the landfill representative and date that the load was received at the landfill.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (or other applicable transportation requirements). The Contractor will be responsible for any and all actions necessary to remedy situations involving material spills during transit. All transportation equipment will be measured by volume (cubic yards). Each load ticket shall include the following information:

- Facility name, address, and phone number;
- Material source and surface location description;

- Ticket number;
- Associated manifest number;
- Truck license plate number;
- Trailer license plate number;
- Container number;
- Transporter's name;
- Net volume of the load.

Egress point on Grand Avenue for truck and equipment transport from the Site will be clean of dirt and other material during invasive work related to development, maintenance, and/or redevelopment of the Site. All transport vehicles will be inspected prior to leaving the Site by the Contractor to ensure that no material adheres to the wheels, undercarriage, tailgates, covers, or other areas of transport vehicles. All vehicles will be cleaned at the Tire Cleaning Pad. The wastewater from the tire wash (if any) will be collected for treatment and disposal, as required.

Movement of the material by the transporter will be scheduled for Monday through Friday during normal daytime business hours only. All transport vehicles will use only truck routes, approved by the NYCDOT and the Parks Department, to transport material to the off-site approved disposal facilities. To the maximum extent possible, all vehicles will avoid traveling on any local streets through any residential areas and will be routed away from environmentally sensitive such areas as parks, school historic sites, wetlands, etc. The transport vehicles will utilize local roads only with the Parks Department approval, in order to get from the Site onto the Interstate as fast as possible (see Appendix "E"). For long-distance hauling, all vehicles will remain on primary highways.

4.6 Backfill and Cover Soil

Upon receipt of data which indicates that the remedial action objectives have been achieved, the excavation will be backfilled with soil from the same location or a pre-approved source – borrowed material. The borrowed material shall not exceed particle sizes of four (4) inches and no more than fifteen (15) percent by weight shall pass the #200 mesh sieve. Some excavations may not be backfilled, but graded for positive drainage subsequent to remediation.

All borrowed fill imported to the Site for use as backfill or for cover soil must meet the 6 NYCRR Part 375 regulatory standards and recommended soil cleanup objectives of TAGM 4046. Soil that exceeds the regulatory standards and materials considered a solid waste will not be accepted at the Site. The fill material shall not smell of petroleum or give off other unnatural or toxic odors.

Backfill sources will be sampled for full TCLP analysis prior to the commencement of this remedial action. Backfill in excavations greater than 2-feet in depth will be conducted in lifts properly compacted to prevent settling. Sampling of backfill materials

from the same source will be conducted at a rate of one sample per 1000 cubic yards, and analyzed for SVOCs, PCBs, and inorganics at an NYSDOH ELAP facility.

Soil composition of the borrowed fill shall be suitable for two types of use at the Site, such as paved areas or areas to receive structures and planting areas. Both types of clean fill shall be free of pesticides, deleterious substances, organic matter, wood, plastic, and other materials, as specified in the Contract document.

Category 1 materials excavated from the Site during intrusive activities can be placed back into the same excavation without chemical testing. During invasive activities, this material will be inspected and field screened. Should gross contamination be identified that is materially different from the typical soil/fill found previously on the Site, this material will be considered Category 2 material and will be handled accordingly. Mechanical processing of the historic fill will not be performed.

4.7 Notification

NYSDEC and NYSDOH will be notified a minimum of 10 days prior to the beginning of any intrusive activities through a written letter at the commencement of each new intrusive effort. The agencies will be informed, at a minimum, of the description of work to be completed, the duration of the work, and certifications of the contractor to perform the work.

5. SUBSURFACE PIPING

The Contractor will exercise extreme care during excavation operations to protect all existing subsurface pipes to remain. It is not anticipated that excavation for any new utility will encounter the existing pipes. If the contractor does encounter such pipes in excavation for new utilities, this excavation shall stop immediately and the Contractor shall notify the Agency. If any of the pipes are damaged during these operations, it will be the Contractor's responsibility to restore the utilities to the satisfaction of the resident engineer. No existing abandoned gas transmission pipes will be removed.

6. DUST CONTROL

Monitoring of invasive work for dust generation will be a primary responsibility of the Contractor. Observation of visible dust will trigger additional dust control measures to mitigate the dust condition. Dust suppression will be achieved using water as needed within excavations and on stockpiled soil. If warranted for outdoor invasive work, dust suppression will be conducted with the use of a water truck equipped with a rear nozzle and water cannon or equivalent to enable the spray of water into off-road areas including excavations and stockpiles. Stockpiles will be kept moist at all times as a measure to control erosion and dust. Preventative measures for dust generation will also include covering impacted soil in outdoor stockpiled areas.

During the excavation activities, the Site perimeter will be monitored for visible dust emissions and readings will be collected and logged with a real-time airborne dust monitor EPAM 5000 or equivalent for air particulates. The Contractor will also collect and log readings for VOCs with a PID and will daily submit the logs of the PID readings and real-time particulate meter to the RE.

Dust and VOC emissions will also be controlled by restricting vehicle speed to 5 mph. A water truck will be used for dust suppression as needed for exposed soil and stockpiles (while uncovered and in use).

7. EROSION CONTROL

All sediment and erosion control practices, including straw bales, catch basin silt sacks, and silt fence will be furnished by the Contractor installed prior to any major soil disturbance, in accordance with the contract specifications. The straw bales and the catch basin silt sacks will be inspected and cleaned frequently and repaired and/or replaced promptly, as necessary.

In order to prevent the excess sediment from leaving the Site to adjacent properties, a temporary silt fence will be installed around the project site, at the locations shown on the SEPC dwg. 09-40-1 in Appendix "F". The fence will be installed prior to land disturbing activities or as necessary to control erosion from the disturbing activities. It shall comply with the contract specifications and all applicable standards for Soil Erosion and Sediment Control in New York State.

The Contractor will locate stockpiled material, especially contaminated material (if any), in areas away from the surface drainage features and plan construction to control surface drainage from stockpiles, staging, and other work areas and prevent erosion and contamination. Stockpiled soil will be lined, sloped, bermed, covered, and secured. The Staging Area will be encircled with silt fences and hay bales, as needed, to contain and filter particulates from any rainwater that has drained off the soil, and to mitigate the potential for surface water run-on, as well as to prevent water flow from stockpiles into stormwater catch basins, sewer, or groundwater. The stockpile areas will be sloped wherever possible and equipped with a sump to collect any rainwater that has drained off the stockpiled soil. Drained water will be removed from the sump, as required. Sediment control measures for stockpiled material will be in place at all times during construction activities. During all on-site activities involving soil disturbance, excavation, and regrading, a site inspection required to confirm to the NYSDEC SPDES general permit requirements and the terms of the Stormwater Pollution Prevention Plan (SWPPP) prepared by the DPR will be conducted once every week by a Professional Engineer (PE) or a qualifying individual working under direct supervision of the PE. Inspection reports will be submitted to DPR.

The amount of stockpiled and exposed soil at one time will be minimized. In the event of any major invasive work that is conducted outdoors whereby truck tires and

undercarriages come into contact with impacted soil, one or more stabilized site entrances/exits shall be constructed consisting of a clean gravel roadway.

8. RECORD KEEPING AND REPORTING

- A logbook will be maintained, documenting all invasive work on site. This will include, but not be limited to the following:
  - Dates and times of excavation activities.
  - List of personnel conducting these activities.
  - Approximate quantities of soil excavated.
  - Locations of any stockpiled soil.
  - Dates and times of all soil removed from the Site.

- Periodic monitoring reports will be provided by electronic media to NYSDEC's project manager during any excavation, grading and other invasive work that will describe the invasive work including the discovery of any unknown underground storage tanks (USTs), hot spots, or atypical fill/soil. Any such discoveries will be promptly communicated to NYSDEC's project manager. Any spills or releases will similarly be reported within two hours of discovery to the NYSDEC spills hotline and the NYSDEC project manager.

- Reporting will be required during any excavation, grading and other invasive work during development, maintenance or redevelopment at the Site. These documents shall include:
  - A material flow log showing the source and destination of stockpiled impacted soil;
  - Characterization and end-point data of excavation pits (if any); and
  - As-built data of all newly installed equipment or utilities.

9. EMERGENCY TELEPHONE LIST

COMPANY	NAME	PHONE #
General Supervisor	Mark Gross William A. Gross Construction Associates, Inc.	516-437-0909 (Office) 516-779-1153 (Mobile)
Shapiro Engineering, P.C.	Robert A. LoPinto, P.E.	516-791-2300 (Office) 516-816-3800 (Mobile)
	Milana Kononenko	516-385-0721 (Mobile)
NYC Emergency Response	Police/Fire/Medical	911

APPENDIX "A"

SITE-SPECIFIC SOIL CLEANUP OBJECTIVES

(b) Restricted use soil cleanup objectives.

Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted-Residential	Commercial	Industrial		
Metals							
Arsenic	7440-38-2	16[f]	16[f]	16[f]	16[f]	13[f]	16[f]
Barium	7440-39-3	350[f]	400	400	10,000 [d]	433	820
Beryllium	7440-41-7	14	72	590	2,700	10	47
Cadmium	7440-43-9	2.5[f]	4.3	9.3	60	4	7.5
Chromium, hexavalent [h]	18540-29-9	22	110	400	800	1[e]	19
Chromium, trivalent [h]	16065-83-1	36	180	1,500	6,800	41	NS
Copper	7440-50-8	270	270	270	10,000 [d]	50	1,720
Total Cyanide [h]		27	27	27	10,000 [d]	NS	40
Lead	7439-92-1	400	400	1,000	3,900	63[f]	450
Manganese	7439-96-5	2,000[f]	2,000[f]	10,000 [d]	10,000 [d]	1600[f]	2,000[f]
Total Mercury		0.81[j]	0.81[j]	2.8[j]	5.7[j]	0.18[f]	0.73
Nickel	7440-02-0	140	310	310	10,000 [d]	30	130
Selenium	7782-49-2	36	180	1,500	6,800	3.9[f]	4[f]
Silver	7440-22-4	36	180	1,500	6,800	2	8.3
Zinc	7440-66-6	2200	10,000 [d]	10,000 [d]	10,000 [d]	109[f]	2,480
PCBs/Pesticides							
2,4,5-TP Acid (Silvex)	93-72-1	58	100[a]	500[b]	1,000[c]	NS	3.8
4,4'-DDE	72-55-9	1.8	8.9	62	120	0.0033 [e]	17
4,4'-DDT	50-29-3	1.7	7.9	47	94	0.0033 [e]	136
4,4'- DDD	72-54-8	2.6	13	92	180	0.0033 [e]	14
Aldrin	309-00-2	0.019	0.097	0.68	1.4	0.14	0.19
alpha-BHC	319-84-6	0.097	0.48	3.4	6.8	0.04[g]	0.02
beta-BHC	319-85-7	0.072	0.36	3	14	0.6	0.09
Chlordane (alpha)	5103-71-9	0.91	4.2	24	47	1.3	2.9

RAOs
Site Specific Cleanup Goals
KeySpan- Newtown Station
Queens, NY

Sample Identification Date Sampled Parameter	Goal for Carcinogen Cancer Risk Level (mg/kg)	Goal for Noncarcinogen Noncancer Hazard Level (mg/kg)
SVOC 8270		
Acenaphthylene	NC	365
Anthracene	NC	10400
Benzo(a)anthracene	0.672	139
Benzo(a)pyrene	0.0672	139
Benzo(b)fluoranthene	0.672	139
Benzo(g,h,i)perylene	NC	139
Benzo(k)fluoranthene	6.72	139
Bis(2-ethylhexyl)phthalate	55.8	139
Chrysene	67.2	139
Di-n-butyl phthalate	NC	546
Dibenzo(a,h)anthracene	0.0742	139
Fluoranthene	NC	1680
Fluorene	NC	1680
Indeno(1,2,3-cd)pyrene	0.672	139
Naphthalene	NC	123
Phenanthrene	NC	139
Pyrene	NC	1260
Inorganics Lead	**VCA Goal: 400**	

NC- Carcinogenic toxicity values (i.e. slope factors) not available or not applicable

274 A

Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted-Residential	Commercial	Industrial		
delta-BHC	319-86-8	100[a]	100[a]	500[b]	1,000[c]	0.04[g]	0.25
Dibenzofuran	132-64-9	14	59	350	1,000[c]	NS	210
Dieldrin	60-57-1	0.039	0.2	1.4	2.8	0.006	0.1
Endosulfan I	959-98-8	4.8[i]	24[i]	200[i]	920[i]	NS	102
Endosulfan II	33213-65-9	4.8[i]	24[i]	200[i]	920[i]	NS	102
Endosulfan sulfate	1031-07-8	4.8[i]	24[i]	200[i]	920[i]	NS	1,000[c]
Endrin	72-20-8	2.2	11	89	410	0.014	0.06
Heptachlor	76-44-8	0.42	2.1	15	29	0.14	0.38
Lindane	58-89-9	0.28	1.3	9.2	23	6	0.1
Polychlorinated biphenyls	1336-36-3	1	1	1	25	1	3.2
Semivolatiles							
Acenaphthene	83-32-9	100[a]	100[a]	500[b]	1,000[c]	20	98
Acenapthylene	208-96-8	100[a]	100[a]	500[b]	1,000[c]	NS	107
Anthracene	120-12-7	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Benz(a)anthracene	56-55-3	1[f]	1[f]	5.6	11	NS	1[f]
Benzo(a)pyrene	50-32-8	1[f]	1[f]	1[f]	1.1	2.6	22
Benzo(b)fluoranthene	205-99-2	1[f]	1[f]	5.6	11	NS	1.7
Benzo(g,h,i)perylene	191-24-2	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Benzo(k)fluoranthene	207-08-9	1	3.9	56	110	NS	1.7
Chrysene	218-01-9	1[f]	3.9	56	110	NS	1[f]
Dibenz(a,h)anthracene	53-70-3	0.33[e]	0.33[e]	0.56	1.1	NS	1,000[c]
Fluoranthene	206-44-0	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Fluorene	86-73-7	100[a]	100[a]	500[b]	1,000[c]	30	386
Indeno(1,2,3-cd)pyrene	193-39-5	0.5[f]	0.5[f]	5.6	11	NS	8.2
m-Cresol	108-39-4	100[a]	100[a]	500[b]	1,000[c]	NS	0.33[e]
Naphthalene	91-20-3	100[a]	100[a]	500[b]	1,000[c]	NS	12

Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Groundwater
		Residential	Restricted-Residential	Commercial	Industrial		
o-Cresol	95-48-7	100[a]	100[a]	500[b]	1,000[c]	NS	0.33[e]
p-Cresol	106-44-5	34	100[a]	500[b]	1,000[c]	NS	0.33[e]
Pentachlorophenol	87-86-5	2.4	6.7	6.7	55	0.8[e]	0.8[e]
Phenanthrene	85-01-8	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Phenol	108-95-2	100[a]	100[a]	500[b]	1,000[c]	30	0.33[e]
Pyrene	129-00-0	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Volatiles							
1,1,1-Trichloroethane	71-55-6	100[a]	100[a]	500[b]	1,000[c]	NS	0.68
1,1-Dichloroethane	75-34-3	19	26	240	480	NS	0.27
1,1-Dichloroethene	75-35-4	100[a]	100[a]	500[b]	1,000[c]	NS	0.33
1,2-Dichlorobenzene	95-50-1	100[a]	100[a]	500[b]	1,000[c]	NS	1.1
1,2-Dichloroethane	107-06-2	2.3	3.1	30	60	10	0.02[f]
cis-1,2-Dichloroethene	156-59-2	59	100[a]	500[b]	1,000[c]	NS	0.25
trans-1,2-Dichloroethene	156-60-5	100[a]	100[a]	500[b]	1,000[c]	NS	0.19
1,3-Dichlorobenzene	541-73-1	17	49	280	560	NS	2.4
1,4-Dichlorobenzene	106-46-7	9.8	13	130	250	20	1.8
1,4-Dioxane	123-91-1	9.8	13	130	250	0.1[e]	0.1[e]
Acetone	67-64-1	100[a]	100[b]	500[b]	1,000[c]	2.2	0.05
Benzene	71-43-2	2.9	4.8	44	89	70	0.06
Butylbenzene	104-51-8	100[a]	100[a]	500[b]	1,000[c]	NS	12
Carbon tetrachloride	56-23-5	1.4	2.4	22	44	NS	0.76
Chlorobenzene	108-90-7	100[a]	100[a]	500[b]	1,000[c]	40	1.1
Chloroform	67-66-3	10	49	350	700	12	0.37
Ethylbenzene	100-41-4	30	41	390	780	NS	1
Hexachlorobenzene	118-74-1	0.33[e]	1.2	6	12	NS	3.2
Methyl ethyl ketone	78-93-3	100[a]	100[a]	500[b]	1,000[c]	100[a]	0.12

Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted-Residential	Commercial	Industrial		
Methyl tert-butyl ether	1634-04-4	62	100[a]	500[b]	1,000[c]	NS	0.93
Methylene chloride	75-09-2	51	100[a]	500[b]	1,000[c]	12	0.05
n-Propylbenzene	103-65-1	100[a]	100[a]	500[b]	1,000[c]	NS	3.9
sec-Butylbenzene	135-98-8	100[a]	100[a]	500[b]	1,000[c]	NS	11
tert-Butylbenzene	98-06-6	100[a]	100[a]	500[b]	1,000[c]	NS	5.9
Tetrachloroethene	127-18-4	5.5	19	150	300	2	1.3
Toluene	108-88-3	100[a]	100[a]	500[b]	1,000[c]	36	0.7
Trichloroethene	79-01-6	10	21	200	400	2	0.47
1,2,4-Trimethylbenzene	95-63-6	47	52	190	380	NS	3.6
1,3,5- Trimethylbenzene	108-67-8	47	52	190	380	NS	8.4
Vinyl chloride	75-01-4	0.21	0.9	13	27	NS	0.02
Xylene (mixed)	1330-20-7	100[a]	100[a]	500[b]	1,000[c]	0.26	1.6

All soil cleanup objectives (SCOs) are in parts per million (ppm).
NS=Not specified. See Technical Support Document (TSD).

Footnotes

[a] The SCOs for residential, restricted-residential and ecological resources use were capped at a maximum value of 100 ppm. See TSD section 9.3.

[b] The SCOs for commercial use were capped at a maximum value of 500 ppm. See TSD section 9.3.

[c] The SCOs for industrial use and the protection of groundwater were capped at a maximum value of 1000 ppm. See TSD section 9.3.

[d] The SCOs for metals were capped at a maximum value of 10,000 ppm. See TSD section 9.3.

[e] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the SCO value.

[f] For constituents where the calculated SCO was lower than the rural soil background concentration as determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 2 SCO value for this use of the site.

[g] This SCO is derived from data on mixed isomers of BHC.

[h] The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

[i] This SCO is for the sum of endosulfan I, endosulfan II, and endosulfan sulfate.

[j] This SCO is the lower of the values for mercury (elemental) or mercury (inorganic salts). See TSD Table 5.6-1.