

**920-924 WESTCHESTER AVENUE
BRONX, NEW YORK**

Remedial Action Work Plan

NYC BCP Number: NYC 11CBCP002X & 11CBCP003X

Prepared for:

MJM Construction Services
242-01 Braddock Avenue
Bellrose, New York 11426

Prepared by:

Hydro Tech Environmental, Corp.
15 Ocean Avenue 2nd Floor
Brooklyn, NY 11225
Phone: (718) 636-0800

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I certify that all engineering plans, specifications and associated designs included in the RAWP have been personally developed by me or under my direct supervision, meet industry standards, and are appropriate for the intended purpose established in this Plan. It is a violation of Article 130 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 130, New York State Education Law.

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REMEDIAL ACTION WORK PLAN

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LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
BOA	Brownfield Opportunity Area
CAMP	Community Air Monitoring Plan
C/D	Construction/Demolition
COC	Certificate of Completion
DCR	Declaration of Covenants and Restrictions
ECs/ICs	Engineering and Institutional Controls
HASP	Health and Safety Plan
BCA	Brownfield Cleanup Agreement
MNA	Monitored Natural Attenuation
NOC	Notice of Completion
NYC BCP	New York City Brownfield Cleanup Program
NYC DEP	New York City Department of Environmental Protection
NYC DOHMH	New York State Department of Health and Mental Hygiene
NYCRR	New York Codes Rules and Regulations
NYC OER	New York City Office of Environmental Remediation
NYS DEC	New York State Department of Environmental Conservation
NYS DEC DER	New York State Department of Environmental Conservation Division of Environmental Remediation
NYS DOH	New York State Department of Health
ORC	Oxygen-Release Compound
OSHA	United States Occupational Health and Safety Administration
PE	Professional Engineer
PID	Photo Ionization Detector
QEP	Qualified Environmental Professional
QHHEA	Qualitative Human Health Exposure Assessment
RAOs	Remedial Action Objectives
RAR	Remedial Action Report

RAWP	Remedial Action Work Plan or Plan
RCA	Recycled Concrete Aggregate
RI	Remedial Investigation
SCOs	Soil Cleanup Objectives
SCG	Standards, Criteria and Guidance
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SVOC	Semi-Volatile Organic Compound
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

Site Description, Physical Setting and Site History

MJM Construction Services is filing an application to enter two sites into the New York City Brownfield Cleanup Program (NYC BCP) under the management of the Mayor's Office of Environmental Remediation (NYCOER) as a Volunteer. These Sites are associated with Brownfield Cleanup Program, Sites Nos. 11CBCP002X and 11CBCP003X.

The Sites are a total of approximately 0.6-acre in area, consists of two adjacent lots identified as Lot 35 and 38 and is located at the block front (Block 2697) on the southern-southeastern end of Westchester Avenue between Rogers Place and Intervale Avenue in the central section of the Borough of the Bronx, New York. The Sites are currently vacant and do not have any building improvements. The topography of the Sites is generally level. Lot 35 is associated with BCP #11CBCP002X and Lot 38 is associated with BCP #11CBCP003X.

The applicant is proposing to make the Sites protective of human health and the environment consistent with the contemplated end use for residential and commercial purposes. Proposed development of the Sites will consist of a mixed-use residential and commercial building with a community facility and a full basement. The basement will consist of a parking area and will be developed over both entire Sites.

Summary of Past Uses of Sites and Areas of Concern

Three Phase I Environmental Site Assessment (ESA) Reports for the Applicant by Don Carlo Environmental Services, Inc. and Hydro Tech Environmental Corp. were reviewed to establish the site history. Lot 35 was historically utilized as gasoline station from at least 1977 to 1981 and was recently utilized as an auto maintenance facility. Two open New York State Department of Environmental Conservation (NYSDEC) Spill Numbers and one closed NYSDEC Spill Number are associated with Lot 35. NYSDEC Spill #06-13228 was issued to Lot 35 on March 9th, 2007, following a tank test failure of underground storage tank (UST) containing waste oil. NYSDEC Spill #07-00175 was issued to Lot 35 on April 4th, 2007, following the identification of soil impact in the vicinity of abandoned gasoline USTs. All USTs identified at

Lot 35 were closed and removed in August 25th, 2008. During tank removal activities, approximately 366 tons of petroleum contaminated soil was properly disposed off-site and a Spill #08-03439 was called in. This spill case was then closed on September 3rd, 2008.

Lot 38 consisted of a 1-story warehouse with a full basement. Lot 38 was historically utilized as a bottling facility and was most recently utilized for the storage of various beverages.

Area of Concerns (AOCs) are listed below:

1. The presence of Poly Aromatic Hydrocarbons (PAHs), VOCs and metals at concentrations exceeding the Soil Clean up Objectives on Lot 35. PAHs associated with fill material are present in shallow soil from zero to 7 feet in the western and southern portions of Lot 35. VOCs associated with Open NYSDEC Spills #06-13228 & #07-00175 are present in deep soil throughout Lot 35. These VOCs extend from 7 feet to the perched groundwater present at the Site. Presence of metals in soil throughout Site.
2. The Presence of VOCs and SVOCs associated with NYSDEC Spills #06-13228 & #07-00175 in groundwater beneath Lot 35. Presence of total and dissolved metals in groundwater throughout the Site.
3. Presence of VOCs in soil vapors attributed to NYSDEC Spills 06-13228 & #07-00175 on Lot 35 throughout the Sites (with lower concentrations on Lot 38) and beneath the Sidewalks on the south side of Westchester Avenue and the west side of Rogers Place.

Summary of the Work Performed under the Remedial Investigation

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Performed a Ground Penetrating Radar (GPR) survey over approximately 90 percent of Lot 35 and approximately 60 percent of Lot 38;
3. Installed eighteen soil borings throughout the Sites, and collected twenty five soil samples for chemical analysis from the soil borings to evaluate soil quality; These included seven shallow soil samples zero to 2 feet below grade and seven deep soil samples ranging from 6 to 10 feet below grade were collected at Lot 35. A total of eight soil samples were collected from zero to 2 feet beneath the former basement slab at Lot

38, which was approximately 8 feet below grade. Three deep soil samples were collected at depths ranging from 6 to 12 feet below grade from off-site soil probes.

4. Installed six on-site and four off-site groundwater monitoring wells to establish groundwater flow and collected nine groundwater samples for chemical analysis to further evaluate groundwater quality;
5. Installed ten soil vapor probes around perimeter of the Sites and collected ten samples for chemical analysis;

Summary of the Geological and Hydrogeological Findings

The Geology and Hydrogeology of the Sites have been thoroughly investigated. Findings of the investigations indicate:

1. Elevation of the properties ranges from 35 to 37 feet.
2. Depth to groundwater ranges from 7.78 to 10.98 feet at the Sites.
3. Groundwater flow is generally from north to south beneath the Sites.
4. Bedrock with materials class ranging from 2 to 65 was identified beneath the Site at variable depths ranging from 10 to 53 feet.
5. The stratigraphy, from grade surface at lot 35 to groundwater down, consists of historic fill ranging in thickness from zero to 7 feet (asphalt fragments, of brick tiles and loose to medium compact, brown fine to coarse sand with traces of silt). The fill layer is underlain by natural soil to variable depths ranging from 7 to 17 feet (fine compact sand with trace of silt, gravel, pebbles and decomposed rocks). Rock is located immediately beneath the sand and down to variable depths from 10 to 53 feet (decomposed and fragmented rocks with evidence of mica schist).
6. Medium to fine grained sand underlies the basement slab at Lot 38. Rock is located immediately beneath the sand and down to variable depths from 10 to 53 feet (decomposed and fragmented rocks with evidence of mica schist).

Summary of the Environmental Contamination

1. Boring samples collected during the RI indicate the presence of historic fill material in shallow soil (0 to 7 feet) at Lot 35. The fill material mainly consists of coal, glass and brick fragments.
2. Soil samples collected during the RI confirm the presence of semi-volatile organic compounds (SVOCs) and metals and are attributable to the presence of historic fill. SVOCs, specifically classified as Poly Aromatic Hydrocarbons (PAHs) are present in the western and southern portions of Lot 35 at concentrations exceeding the USCO. For example Benzo (a) Anthracene is present in the shallow soil at Lot 35 at concentrations ranging from 1,200 $\mu\text{g}/\text{kg}$ in south-central portion of Lot 35 (SP-2) to 16,000 $\mu\text{g}/\text{kg}$ in northwestern portion of Lot 35 (SP-7) and Benzo (a) Pyrene at concentrations ranging from 1,100 $\mu\text{g}/\text{kg}$ in SP-2 to 14,000 $\mu\text{g}/\text{kg}$ in SP-7. Metals were detected across Lot 35 at concentrations exceeding the USCO. Lead concentrations in shallow soil (urban fill material) range from 25.5 mg/kg in the western portion of Lot 38 (SP-8) to 670 mg/kg in the northwestern portion of Lot 35 (SP-7). Lead concentrations in deep soil range from 1.12 mg/kg in the eastern portion of Lot 35 (SP-4) to 713 mg/kg in the southwestern portion of Lot 35 (SP-1).
3. Soil samples collected during the RI also confirm the presence of VOCs typical of gasoline constituents in the deep soil throughout Lot 35. These VOCs are directly related to NYSDEC Spill #'s 06-13228 and 07-00175 and are present at concentrations exceeding their respective USCOs. These elevated levels of gasoline compounds extend from 7 feet to the perched groundwater present at the Site. The major total volatile organic compounds (VOCs) concentration (245,000 $\mu\text{g}/\text{kg}$) was detected at the capillary fringe in the central portion of Lot 35 (SP-5). For example in SP-5 the compound 1,2,4-trimethylbenzene is present at a concentration exceeding 93,000 $\mu\text{g}/\text{kg}$ and total Xylenes is present at a concentration exceeding 66,000 $\mu\text{g}/\text{kg}$.
4. Groundwater samples collected during the RI confirmed the presence of COCs on-Site in the form of VOCs and SVOCs at Lot 35 and the presence of soil and trace metals and turbidity related metals throughout the Site in isolated locations off-Site. The gasoline compounds are directly related to NYSDEC Spill # 06-13228 and 07-00175. The

greatest levels of dissolved gasoline compounds were detected during the RI investigation beneath the southeastern portion of Lot 35 (MW-7) at total concentrations of 4,637 µg/L. For example 1,2,4-Trimethylbenzene was detected in MW-7 at 2,200 µg/L and total Xylene at 540 µg/L. The groundwater plume does not extend downgradient toward the adjacent commercial property located to the south of the Site. Groundwater containing dissolved metals at concentrations exceeding the respective 6NYCRR Part 703.5 Class GA Groundwater Quality Standards for metals such as Aluminum, Chromium, Lead, Iron and Zinc is present beneath the Site. For example detected levels of Aluminum range from 31.1 mg/L in the northwestern portion of Lot 35 (MW-2) to 113 mg/L in the sidewalk along the southern side of Westchester Avenue (MW-10) and Lead range from 0.052 mg/L in the eastern portion of Lot 35 (MW-8) to 0.164 mg/L in the south-central portion of Lot 35 (MW-1).

5. All contamination related to spills identified on Lot 35 are being managed under a separate remedial action with DEC.
6. Evidence of fill material was identified in the southern portion of Lot 38. The fill material contains levels of PAHs at concentrations less than the UUSCO were detected directly beneath the basement slab from 0 to 2 feet and include Benzo (a) Anthracene, Chrysene, Benzo (b) Fluoranthene and Benzo (a) Pyrene. Low levels of Cadmium and Lead were also detected beneath the central portion of the basement slab.
7. Soil vapor samples collected during the RI confirmed the presence of COCs on both Sites. The COCs are typical gasoline VOCs and are identified beneath the Sidewalks on the south side of Westchester Avenue and the west side of Rogers Place. The soil vapors are attributed to NYSDEC Spill # 06-13228 and #0700175. The major on-site vapor concentrations (total concentrations) range from 262 microgram per cubic meter (mcg/m³) detected in the western portion of Lot 38 (SG-4) to 294,300 mcg/m³ detected in the vicinity of the former gasoline UST in the northwestern portion of Lot 35 (SG-10). Off-site vapor concentrations range from 173 mcg/m³ to the north of Lot 38 (SG- 2) to 7,658 mcg/m³ to the north of Lot 35 (SG-1). Evidence presented in the RIR suggests that there is some influence of an offsite gasoline source contributing soil vapor on the Site.
8. Aboveground Storage Tanks (ASTs) are absent at the Site.

Qualitative Human Health Exposure Assessment

A Qualitative Human Health Exposure Assessment (QHHEA) was performed and indicated that that potential exposure pathways are considered incomplete for future remediated conditions and complete under remedial conditions. The latter requires appropriate Health and Safety program and community air monitoring program during remedial action.

Summary of the Remedy

The preferred remedy listed below achieves protection of public health and the environment for the intended use of the property. The preferred remedial action alternative achieves all of the remedial action objectives established for the project and addresses applicable SCGs. The preferred remedial action alternative is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants. The preferred remedial action alternative is cost effective, implementable and uses standards methods that are well established in the industry.

The different elements to be implemented during the Site remediation will include:

1. Performance of all required NYC BCP citizen participation activities according to an approved Citizen Participation Plan (CPP).
2. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
3. Performance of Community Air Monitoring Program for particulates and volatile organic carbon compounds.
4. Implementation of storm-water pollution prevention measures.
5. Performance of all activities associated with the remedial action, including permitting requirements and pretreatment requirements, will be addressed in accordance with all applicable Federal, State and City laws and regulations.
6. Establishment of Track 1 Soil Cleanup Objectives (SCOs).

7. Excavation and removal of soil/fill exceeding Track 1 SCOs. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with all Federal, State and City laws and regulations for handling, transport, and disposal. Track 4 SCOs will be established in the event that a Track 1 cleanup can be accomplished.
8. Sampling and analysis of excavated media as required by disposal facilities.
9. Excavation of contaminated media from areas of concern identified during RI.
10. Appropriate segregation of excavated media.
11. Collection and analysis of end-point samples to evaluate the performance of the remedy with respect to attainment of SCOs.
12. Removal of Underground Storage Tanks that may be encountered during the soil excavation under proper authority and their proper registration with the NYSDEC Petroleum Bulk Storage (PBS) unit.
13. The closure of petroleum spills under authority of New York State Department of Environmental Conservation. The NYSDEC has approved plans known as Remedial Action Plan dated February 24, 2010, Groundwater Remediation Action Plan dated July 15, 2010 and Vapor Barrier Design Specifications dated August 5, 2010, which describe the remediation of soil and groundwater on Lot 35. The NYSDEC approval letters are provided in Appendix 1. The Groundwater Remedial Action Plan is provided in Appendix 6. The Vapor Barrier Design Specifications are provided in Appendix 8.
 - a. Injection of oxygen release compound and performance of post-remedial monitoring for volatile organic compounds, semi-volatile organic compounds and aquifer parameters to evaluate the effectiveness of the treatment. This work is being performed under the approval of the NYSDEC.
 - b. Installation of a continuous vapor barrier beneath the entire building slab to prevent human exposure to residual soil vapor remaining under the Sites; this work is being performed under the approval of the NYSDEC. In addition, the basement of the building will consist of a ventilated sub-grade parking garage that will also prevent the buildup of any vapors within the structure.

- c. Excavation and removal of soil containing gasoline compounds exceeding Track 1 SCOs. Transportation and off-Site disposal of all soil containing gasoline compounds exceeding Track 1 SCOs material at permitted facilities in accordance with all Federal, State and City laws and regulations for handling, transport, and disposal. This work is being performed under the approval of the NYSDEC.
14. Screening for indications of contamination (by visual means, odor, and monitoring with a photo ionization detector (PID)) of excavated soil/fill during all intrusive work.
 15. Import of materials to be used for backfill and cover in compliance with OER approved plan and in accordance with all Federal, State and City laws and regulations.
 16. Placement of backfill material behind foundation walls.
 17. If Track 1 cannot be achieved, recording of a Declaration of Covenants and Restrictions that includes a full listing of Engineering Controls and Institutional Controls and notice that these controls must be maintained within a Site Management Plan to prevent future exposure to any residual contamination remaining at the Site.
 18. If Track 1 cannot be achieved, establishment in a recorded Declaration of Covenants and Restrictions, a series of Institutional Controls on the Site, including: (1) compliance with the provisions of the recorded Declaration of Covenants and Restrictions; (2) compliance with provisions of the approved Site Management Plan; (3) operation and maintenance of Engineering Controls as specified in the Site Management Plan; (4) inspection and certification of all Engineering Controls at a frequency and in a manner defined in the Site Management Plan; (5) performance of environmental and public health monitoring as defined in the Site Management Plan; (6) reporting at a frequency and in a manner defined in the Site Management Plan; (7) protection of on-Site monitoring devices in a manner specified in the SMP; and (8) prohibition of discontinuation of Engineering Controls without an OER-approved amendment or extinguishment of the Declaration of Covenants and Restrictions.
 19. If a Track 1 remedy cannot be achieved, establishment in a recorded Declaration of Covenants and Restrictions, a series of site restriction Institutional Controls on the Site, including: (1) prohibition of vegetable gardening and farming; (2) prohibition of the use

of groundwater without treatment rendering it safe for the intended use; (3) prohibition on all disturbance of residual contaminated material unless it is conducted in accordance with the provisions in the Site Management Plan; and (4) prohibition on higher level of land usage without an OER-approved amendment or extinguishment of this Declaration of Covenants and Restrictions.

20. Submission of a RAR which describes the remedial activities including any changes from this RAWP, certifies that the remedial requirements have or will be achieved, defines the Site boundaries, and describes any Engineering and Institutional Controls to be implemented at the Site.
21. If Track 1 Objective is not achieved, an approved Site Management Plan will be submitted in the Remedial Action Report for long-term management of residual contamination, including plans for Institutional and Engineering Controls for: (1) inspection and certification, (2) monitoring, (3) operation and maintenance, and (4) reporting.

COMMUNITY PROTECTION STATEMENT

The Office of Environmental Remediation created the New York City Brownfield Cleanup Program (NYC BCP) to provide governmental oversight for the cleanup of contaminated property in NYC. This Remedial Action Work Plan (“cleanup plan”) describes the findings of prior environmental studies that show the location of contamination at the sites, and describes the plans to clean up the Sites to protect public health and the environment.

This Remedial Action Work Plan for 920-924 Westchester Avenue Site provides a very high level of protection for neighboring communities. This cleanup plan also includes many other elements that address common community concerns, such as community air monitoring, odor, dust and noise controls, hours of operation, good housekeeping and egress cleanliness, truck management and routing, and opportunities for community participation. The purpose of this Community Protection Statement is to explain these community protection measures in non-technical language to simplify community review.

Remedial Investigation and Cleanup Plan. Under the NYC BCP, a thorough cleanup study of this property (called a remedial investigations) have been performed to identify past property usage, to sample and test soils, groundwater and soil vapor, and identify contaminant sources present on the property. The cleanup plan has been designed to address all contaminant sources that have been identified during the study of this property.

Identification of Sensitive Land Uses. Prior to selecting a cleanup, the neighborhood was evaluated to identify sensitive land uses nearby, such as schools, day care facilities, hospitals and residential areas. The cleanup program was then tailored to address the special conditions of this community. Land uses in the area include public school identified as “Bronx Regional High School”, located within 450 feet to the north of the Site.

Qualitative Human Health Exposure Assessment. An important part of the cleanup study of the Sites are the performance of a study to find all of the ways that people might come in contact with contaminants of the Sites now or in the future. This study is called a Qualitative Human Health Exposure Assessment (QHHEA). A QHHEA was performed for this project and is included in this plan as Appendix 2. This assessment has considered all known contamination

at the Sites and evaluated the potential for people to come in contact with this contamination. All potential public exposures will be addressed under this cleanup plan.

Health and Safety Plan. This cleanup plan includes a Health and Safety Plan that is designed to protect community residents and on-Site workers. The elements of this plan are in compliance with safety requirements of the United States Occupational Health and Safety Administration. This plan includes many protective elements including those discussed below. The Health and Safety plan is included in this RAWP as Appendix 3.

Site Safety Coordinator. This project has a designated Site safety coordinator to implement the Health and Safety Plan. The safety coordinator maintains an emergency contact sheet and protocol for management of emergencies. The Site safety coordinator is Paul I. Matli and can be reached at 631-241-7165.

Worker Training. Workers participating in cleanup of contaminated material on this project are required to be trained in a 40-hour hazardous waste operators training course and to take annual refresher training. This pertains to workers performing specific tasks including removing contaminated material and installing cleanup systems in contaminated areas.

Community Air Monitoring Plan (CAMP). Community air monitoring will be performed during this cleanup project to ensure that the community is properly protected from contaminants, dust and odors. Air samples will be tested in accordance with a detailed plan called the Community Air Monitoring Plan or CAMP. Results will be regularly reported to the NYC Office of Environmental Remediation. This cleanup plan also has a plan to address any unforeseen problems that might occur during the cleanup (called a 'Contingency Plan'). A CAMP is provided in this plan as Appendix 4.

Odor, Dust and Noise Control. This cleanup plan includes actions for odor and dust control. These actions are designed to prevent off-Site odor and dust nuisances and includes steps to be taken if nuisances are detected. Generally, dust is managed by application of physical covers and by water sprays. Odors are controlled by limiting the area of open excavations, physical covers, foams and by a series of other actions (called operational measures). The project is also required to comply with NYC noise control standards. If you observe problems in these

areas, please contact onsite Project Manager Paul I. Matli at 631-241-7165 or OER Project Manager Mr. Shaminder Chawla at 212-788-8841 or at 212- 442-3007.

Quality Assurance Plan. This cleanup plan requires that evidence be provided to illustrate that all cleanup work required under the plan has been completed properly. This evidence will be summarized in the final report, called the Remedial Action Report. This report will be submitted to the NYC Office of Environmental Remediation and will be thoroughly reviewed.

Storm-Water Management. To limit the potential for soil erosion and discharge, this cleanup plan has a storm-water management plan. The main elements of the storm water management plan include physical barriers such as tarp covers and fencing, and a program for frequent inspection. The Storm Water management plan is provided under Appendix 5.

Hours of Operation. The hours for operation of cleanup will be from 7:00 AM to 5:00 PM. These hours are in compliance the NYC Department of Buildings construction code requirements or according to specific variances issued by that agency. OER will be notified by the Volunteer of any variances issued by the Department of Buildings.

Signage. While the cleanup is in progress, a sign will be prominently posted at the main entrance of the property noting that the project is participating in the NYC Brownfield Cleanup Program.

Complaint Management. The contractor performing this cleanup is required to address all complaints. If you have any complaints, you can call the facility Project Manager Paul I. Matli at 631-241-7165 or OER Project Manager Mr. Shaminder Chawla at 212-788-8841 or at 212-442-3007, or call 311 and mention the Sites are in the NYC Brownfield Cleanup Program.

Utility Mark-outs. To promote safety during excavation in this cleanup, the contractor is required to first identify all utilities and must perform all excavation and construction work in compliance with NYC Department of Buildings regulations.

Soil and Liquid Disposal. All soil and liquid material removed from the Site as part of the cleanup will be transported and disposed of in accordance with all City, State and Federal regulations and required permits will be obtained.

Soil Chemical Testing and Screening. All excavations will be supervised by a trained and properly qualified environmental professional. In addition to extensive sampling and chemical testing of soils on the Site, excavated soil will be screened continuously using hand-held instruments, by sight, and by smell to ensure proper material handling and management, and community protection.

Stockpile Management. Soil stockpiles will be kept covered with tarps to prevent dust, odors and erosion. Stockpiles will be frequently inspected. Damaged tarp covers will be promptly replaced. Stockpiles will be protected with silt fences. Hay bales will be used, as needed to protect storm water catch basins and other discharge points.

Trucks and Covers. Loaded trucks leaving the Sites will be securely covered to prevent dust and odor, and properly recorded in logs and records and placarded in compliance with City, State and Federal laws, including those of the New York State Department of Transportation. If loads contain wet material that can leak, truck liners will be used. All transport of materials will be performed by licensed truckers and in compliance with all laws and regulations.

Imported Material. All fill materials proposed to be brought onto the Sites will comply with detailed rules outlined in this cleanup plan and will be inspected and approved by a qualified worker located on-Site. Waste materials will not be brought onto the Sites. Trucks entering the Site with imported clean soils will be securely covered with tight fitting covers.

Equipment Decontamination. All equipment used for cleanup work will be washed before it leaves the Sites. Trucks will be cleaned at a washing station on the property before leaving the Sites.

Housekeeping. Locations where trucks enter or leave the Sites will be inspected every day and cleaned regularly to ensure that they are free of dirt and other materials from the Site.

Truck Routing. Truck routes have been selected to: (a) limit transport through residential areas and past sensitive nearby properties; (b) maximize use of city-mapped truck routes; (c) limit total distance to major highways; (d) promote safety in entry to highways; (e) promote overall safety in trucking; and (f) minimize off-Site line-ups (queuing) of trucks entering the property. Loaded trucks leaving the Sites will not stop or idle in the local neighborhood.

Final Report. The results of all cleanup work will be fully documented in a final report (called a Remedial Action Report) that will be available for you to review in the public document repositories located at Woodstock Branch Library.

Long-Term Site Management. If a complete removal of all contaminants is not achieved, after the cleanup is complete, the property owner will be required to provide a long term protection by complying with an ongoing Site Management Plan that calls for continued inspection of protective controls, such as Site covers. The Site Management Plan is evaluated and approved by the NYC Office of Environmental Remediation. Requirements that the property owner must comply with are defined in the property's deed. A certification of continued protectiveness of the cleanup will be required from time to time to show that the approved cleanup is still effective.

CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and Hydro Tech Environmental Corp. have established this Citizen Participation Plan because the opportunity for citizen participation is an important component of the NYC Brownfield Cleanup Program. A NYC BCP brownfield site is any property in the City in which redevelopment or reuse may be complicated by the presence or potential presence of light to moderate levels of contamination. This Citizen Participation Plan describes how information about the project will be disseminated to the Community during the remedial process. As part of its obligations under the NYC BCP, Hydro Tech Environmental Corp. will maintain a repository for project documents and provide public notice at specified times throughout the remedial program. This Plan also takes into account potential environmental justice concerns in the Community that surrounds the project Site. Under this Citizen Participation Plan, project documents and work plans are made available to the public in a timely manner. Public comment on work plans is strongly encouraged during public comment periods. Work plans are not approved by the NYC Office of Environmental Remediation (OER) until public comment periods have expired and all comments are formally reviewed. An explanation of cleanup plans in the form of a public meeting or informational session is available upon request to OER's project manager assigned to this Site, Mr. Shaminder Chawla, who can be contacted about these issues or any others questions, comments or concerns that arise during the remedial process at 212-788-8841 or at 212- 442-3007.

Project Contact List. OER has established a Site Contact List for this project to provide public notices in the form of fact sheets to interested members of the Community. Communications will include updates on important information relating to the progress of the cleanup program at the Sites as well as to request public comments on the cleanup plan. The Project Contact List includes owners and occupants of adjacent buildings and homes, principal administrators of nearby schools, hospitals and day care centers, the public water supplier that serves the area, established document repositories, the representative Community Board, City Council members, other elected representatives and any local Brownfield Opportunity Area (BOA) grantee organizations. Any member of the public or organization will be added to the Site Contact List on request. A copy of the Site Contact List is maintained by OER's project

manager. If you would like to be added to the Project Contact List, contact NYC OER at (212) 788-8841 or by email at brownfields@cityhall.nyc.gov.

Repositories. A document repository is maintained in the nearest public library that maintains evening and weekend hours. This document repository is intended to house, for community review, all principal documents generated during the cleanup program including project applications, Remedial Investigation plans and reports, draft and final Remedial Action plans and reports, the Site Management Plan, the Notice of Completion and all public notices and fact sheets produced during the lifetime of the remedial project. Hydro Tech Environmental Corp. will regularly inspect the repositories to ensure that they are fully populated with project information. The repository for this project is:

Woodstock Branch Library

Address: 761 East 160th Street

Tel: 718-665-6255

Hours of operations:

Monday and Thursday: 10:00 AM to 8:00 PM

Tuesday and Wednesday: 10:00 AM to 6:00 PM

Friday and Saturday: 10:00 AM to 5:00 PM

Digital Documentation. NYC OER strongly encourages the use of digital documents in repositories as a means of minimizing paper use while also increasing convenience in access and ease of use.

Public Notice and Public Comment. Public notice to all members of the Project Contact List is required at three major steps during the performance of the cleanup program (listed below) and at other points that may be required by OER. Notices will include Fact Sheets with descriptive project summaries, updates on recent and upcoming project activities, repository information, and important phone and email contact information. All notices will be prepared by

Hydro Tech Environmental Corp., reviewed and approved by OER prior to distribution and mailed by Hydro Tech Environmental Corp., who is obligated to submit a certification of mailing to OER within five days of the mailing date. Public comment is solicited in public notices for all work plans developed under the NYC Brownfield Cleanup Program. Final review of all work plans by OER will consider all public comments. Approval will not be granted until the public comment period has been completed.

Citizen Participation Milestones. Public notice and public comment activities occur at several steps during a typical NYC BCP project. These include:

- **Public Notice of the availability of the NYC BCP Application, Remedial Investigation Report and Remedial Action Work Plan and a 30-day public comment period on the Application and Remedial Action Work Plan.**

Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the availability of the Application, Remedial Investigation Report and Remedial Action Work Plan and the initiation of a 30-day public comment period on the Application and Remedial Action Work Plan. The Fact Sheet summarizes the findings of the RIR and provides details of the RAWP. The public comment period will be extended an additional 15 days upon public request. A public meeting or informational session will be conducted by OER upon request.

- **Public Notice announcing the approval of the RAWP and the start of remediation**

Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the approval of the RAWP and the start of remediation.

- **Public Notice announcing the completion of remediation, designation of Institutional and Engineering Controls and issuance of the Notice of Completion**

Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the completion of remediation, providing a list of all Institutional and Engineering Controls implemented for the Site and announcing the issuance of the Notice of Completion.

SUSTAINABILITY STATEMENT

The Sustainability Statement is a program employed by OER to encourage the Enrollee to consider the benefits of sustainable remediation and development during the formative project planning process. The Sustainability Statement provides a summary of sustainability efforts to be employed by the Enrollee or its contracting team. OER strongly recommends, but does not require, that the Enrollee employ sustainable means to implement the selected remedy defined in this RAWP and subsequent redevelopment including those that take into consideration the sustainability goals defined in PlaNYC. Such goals include: maximizing the recycling and reuse of clean, non-virgin materials; reducing the consumption of virgin and non-renewable resources; minimizing energy consumption and greenhouse gas emissions; improving energy efficiency; and enhancing biodiversity during landscaping associated with Site development.

This Sustainability Statement summarizes sustainable and green remediation efforts to be employed under this Remedial Action Work Plan (RAWP). The MJM Construction Services has evaluated sustainable remediation opportunities and proposes the following means to address these goals in the remediation and redevelopment.

Reuse of Clean, Recyclable Materials. Reuse of clean, recyclable materials reduces consumption of non-renewable virgin resources and can provide energy savings and greenhouse gas reduction since these materials can be locally-derived.

An estimate of the mass (tonnage) of clean, non-virgin materials (reported by type of material) reused under this plan will be quantified and reported in the RAR in total tonnage.

Reduce Consumption of Virgin and Non-Renewable Resources. Reduced consumption of virgin and non-renewable resources lowers the overall environmental impact of the project on the region by conserving these resources.

An estimate of the mass (tonnage) of virgin and non-renewable resources, the use of which will be avoided under this plan, will be quantified and reported in the RAR in total tonnage.

Recontamination Control. Recontamination after cleanup and redevelopment is completed undermines the value of work performed, may result in a property that is less protective of public health or the environment, and may necessitate additional cleanup work later or impede future

redevelopment. Recontamination can arise from future releases that occur within the property or by influx of existing contamination from off-Site.

Under future conditions, building recontamination from potential off-site sources will be prevented through the use of a vapor barrier below the building slab and construction of a ventilated sub-grade parking structure. Current regulations will be met for storage and handling of any materials onsite that may present a potential recontamination threat. Long-term site management will include periodic site inspection that will identify and correct any new issues of environmental concern.

An estimate of the area of the Site that utilizes recontamination controls under this plan will be reported in the RAR in total acres and percentage of total Site area.

Storm-water Retention. Storm-water retention improves water quality by lowering the rate of combined storm-water and sewer discharges to NYC's sewage treatment plants during periods of precipitation, and reduces the volume of untreated influent to local surface waters.

An estimate of the enhanced storm-water retention capability of the brownfield redevelopment project will be included in the RAR.

Linkage with Green Building. Green buildings provide a multitude of benefits to the city across a broad range of areas, such as reduction of energy consumption, conservation of resources, and reduction in toxic materials use.

The number of Green buildings that are associated with this brownfield redevelopment property will be reported in the RAR. The total square footage of green building space created as a function of this brownfield redevelopment will be quantified for residential, commercial and industrial/manufacturing uses.

Paperless Brownfield Cleanup Program. MJM Construction Services is participating in OER's Paperless Brownfield Cleanup Program. Under this program, submission of electronic documents will replace submission of hard copies for the review of project documents, communications and milestone reports. A gross estimate of the number of pounds of paper saved under this plan will be reported in the RAR.

Low-Energy Project Management Program. MJM Construction Services is participating in OER's low-energy project management program. Under this program, whenever possible, meetings are held using remote communication technologies, such as videoconferencing and teleconferencing to reduce energy consumption and traffic congestion associated with personal transportation. A gross estimate of the number of miles of personal transportation that is conserved in this process, and the number of commuter trips within NYC that are avoided will be quantified and reported in the RAR.

Trees and Plantings. Trees and other plantings provide habitat and add to NYC's environmental quality in a wide variety of ways. Native plant species and native habitat provide optimal support to local fauna, promote local biodiversity, and require less maintenance.

An estimate of the land area, which will be vegetated, including the number of trees planted or preserved, will be reported in square feet in the RAR.

Grey Water Reuse. Reuse of gray water, including harvested rainwater, in place of water from NYC's water distribution system reduces demand on the city's water supply and conserves this valuable resource.

A gross estimate of the grey water reuse capability of the brownfield redevelopment project will be reported (gallons per day).

REMEDIAL ACTION WORK PLAN

1.0 INTRODUCTION

MJM Construction Services has enrolled as a Volunteer in the New York City Brownfield Cleanup Program (NYC BCP) to investigate and remediate two Sites on a 0.6-acre parcel located at 920-922 Westchester Avenue in Borough of the Bronx in New York City. Site usage types including residential, commercial and community uses are proposed for the property. This Remedial Action Work Plan (RAWP) summarizes the nature and extent of contamination as determined from data gathered in the Remedial Investigation Report (RIR) dated February 5th, 2010 including a tank closure investigation performed during July 2008, two Site investigations were performed during April 2009 and August 2009 and a RI performed during November 2009. It provides remedial alternatives analysis that includes consideration of a Track 1 (permanent) cleanup, and a description of the proposed remedial action. The remedial action described in this document provides for the protection of public health and the environment, complies with applicable environmental standards, criteria and guidance and conforms with applicable City, State and Federal laws and regulations.

1.1 SITE LOCATION AND DESCRIPTION

The Sites are located in Borough of the Bronx, New York City and are identified as Block 2697; Lots 35 & 38 on the New York City Tax Map. Figure 1 shows the Site locations. The Sites are 0.6 acres and are bounded by Westchester Avenue and an elevated New York City Transit rail track to the north-northwest, Rogers Place to the west and Interval Avenue to the east. A map of the site boundary is shown in Figure 2. Currently, the Sites are vacant and have no building improvements.

1.2 CONTEMPLATED REDEVELOPMENT PLAN

An RI was performed to compile and evaluate data and information necessary to develop this RAWP in a manner that will render the Sites protective of public health and the environment consistent with the contemplated end use. The proposed redevelopment plan and end use is

described below. However, the Remedial Action contemplated under this RAWP may be implemented independently of the proposed redevelopment plan.

The contemplated future use of the Sites will consist of commercial and residential use which includes an 8-story mixed-use residential and commercial building with a community facility and a full basement. The footprint of the building will be 0.44 acres. The basement will consist of a ventilated parking garage and will be developed beneath the entire building. The bottom of the proposed cellar slab will be approximately 11 feet below grade and the cellar slab will be approximately 9 inches in thickness. The proposed depth of excavation is approximately 13 feet below surface grade. The building will be identified as 920-922 Westchester Avenue, Bronx, New York. The proposed development will include open spaces or landscaped areas. Layout of the proposed site development is presented in Figure 3. The current zoning designation is R7-1 general residential district with a C2-4 commercial overlay. The proposed use is consistent with existing zoning for the property.

1.3 DESCRIPTION OF SURROUNDING PROPERTY

The Sites are located in the Longwood section in south Bronx, which is predominantly low-rise residential neighborhood. The predominant land use within ¼ mile radius of the project area is residential and commercial. The zoning classifications in the vicinity of the Site include R6, R7-1, R7-2, C1-2 general residential district with C1-4 and C2-4 overlay.

Sensitive Receptors

A Receptor Survey was performed within a 1-mile radius of the Site. The results of the sensitive receptor database search indicate one (1) sensitive receptor is located within the search area. This sensitive receptor is listed as public school identified as “Bronx Regional High School” and is located upgradient within 450 feet to the north of the Site. No other sensitive receptors including day care facilities, hospitals, rivers, streams, wetlands or other sensitive receptors were identified within 1,000 feet from the Site. The following table indicates the closest sensitive receptors to the Site.

	Distance (feet)	Direction
Schools	448	N
Day care facilities	1,500	S
Hospitals	1,800	W-SW
Rivers, streams	4,200	W
Wetlands	6,200	NW

According to the Bureau of Water and Sewer Operations at the New York City Department of Environmental Protection (NYCDEP), up to 98% of the New York City's surface water is supplied from Catskill/Delaware System west of the Hudson River. The remaining portion of the water supply is provided from the Croton System (the City's original upstate supply) and the City's groundwater system in southeastern Queens.

Based upon the review of the USGS topographic map (*USGS 7 1/2-Minute Brooklyn, New York Quadrangle, 1969, Photorevised 1979*), no recharge basins or ponds are located within the search area.

Figure 4 shows the surrounding land usage, with sensitive environmental receptors indicated.

1.4 PRIOR ACTIVITY

Based on an evaluation of the data and information from the RIR and this RAWP, the presence of inactive hazardous waste as defined in ECL §27-1303 is not suspected.

2.0 DESCRIPTION OF REMEDIAL ACTION OBJECTIVES

2.1 REMEDIAL ACTION OBJECTIVES

Based on the results of the RI, the following Remedial Action Objectives (RAOs) have been identified for this Site:

2.1.1 Groundwater

- Remove contaminant sources causing impact to groundwater.
- Prevent direct exposure to contaminated groundwater.
- Prevent exposure to contaminants volatilizing from contaminated groundwater.

2.1.2 Soil

- Prevent direct contact with contaminated soil.
- Prevent exposure to contaminants volatilizing from contaminated soil.
- Prevent migration of contaminants that would result in groundwater or surface water contamination.

2.1.3 Soil Vapor

- Prevent exposure to contaminants in soil vapor.
- Prevent migration of soil vapor into dwelling and other occupied structures.

3.0 DESCRIPTION OF REMEDIAL ACTION PLAN

3.1 REMEDIAL ACTION ALTERNATIVES ANALYSIS

Two remedial action alternatives are considered in this alternatives analysis. This alternative analysis applies only the fill material identified on Lot 35 unrelated to the petroleum spill that is being managed by NYS DEC. Lot 35 cleanup associated with the gasoline release will be managed directly by the NYSDEC.

Alternative 1 is a Track 1 alternative that involves complete removal of all soil and fills on the property that exceeds the unrestricted Track 1 SCOs. This alternative involves the excavation and removal soil.

Alternative 2 is a Track 4 alternative, with the potential for Track 1 remedy for a substantial percentage of the property that involves:

- Establishment of approved site-specific Soil Cleanup Objectives (SCOs);
- Excavation of soil and fill to a depth of 12 feet over most of the property ;
- Removal of a minimum of one foot of soil fill from remaining areas of the property;
- End-point sampling and attainment of site specific Soil Cleanup Objectives;
- Placement of a final cover over the entire site to eliminate exposure to remaining soil/fill;
- Establishment of use restrictions including prohibitions on the use of groundwater from the site and prohibitions on other sensitive site uses, such as farming or vegetable gardening, to eliminate potential future exposure pathways;
- Installation of a vapor barrier and a ventilated parking garage under the entire building footprint to prevent migration of soil vapor from off-Site sources into the building structure and eliminate exposures to soil vapors;
- Removal of all Underground Storage Tanks and closure of petroleum spills under authority of New York State Department of Environmental Conservation.

- Establish a Site Management Plan to ensure long-term management of these Institutional and Engineering Controls including the performance of periodic inspections and certification that the controls are performing as they were intended; and
- Placement of a deed restriction to memorialize the remedial action and the Engineering and Institutional Controls to ensure that future owners of the site continue to maintain these controls as required.

3.1.1 Threshold Criteria

3.1.1.1 Protection of public health and the environment

This criterion is an evaluation of the remedy's ability to protect public health and the environment, and an assessment of how risks posed through each existing or potential pathway of exposure are eliminated, reduced or controlled through removal, treatment, and implementation of Institutional Controls or Engineering Controls. Protection of public health and the environment must be achieved for all approved remedial actions.

The Track 1 alternative will result in excavation of all soil with contaminant concentration above Track 1 SCOs and would:

- Eliminate the risk of ingestion exposures or other direct contact with contaminated on-Site soils consistent with remedial action objectives;
- Eliminate the risk of leaching into groundwater and ingestion exposures or direct contact with groundwater with contamination derived from the Site consistent with remedial action objectives; and
- Eliminate potential sources for on-Site production of soil vapors, and prevent migration of on-Site derived vapors into occupied structures and eliminate associated inhalation exposures consistent with remedial action objectives.

The Track 4 alternative would:

- Establish approved site specific SCOs;

- Provide excavation and removal of most fill and on-site soils contaminant source areas above site specific SCOs;
 - Removal of most soil and fill to a depth of 12 feet reduces potential contaminant source areas and minimizes the risk of on-Site contaminants leaching into, or coming into contact with groundwater. This would achieve hotspot and source removal also minimizes potential sources for on-Site production and migration of soil vapors.
- Installation of a vapor barrier and ventilated parking garage:
 - The use of a vapor barrier and ventilated parking garage structure prevents the migration of on-Site and off-Site derived vapors into occupied structures and eliminates any associated inhalation exposures.
- Placement of a final cover over the entire site;
 - Placement of a cover on the entire Site eliminates any potential exposures to remaining soils that do not exceed the site specific SCOs.
- Establish use restrictions;
 - Groundwater use restrictions will ensure that future ingestion or other exposures to groundwater are eliminated.
- Establish a Site Management Plan to ensure long term management of Institutional and Engineering Controls;
 - Employment of SMP will ensure that all Engineering and Institutional controls are inspected periodically and requires certification that the remedy continues to perform as it was designed, thus ensuring that the protections achieved for public health and the environment remain in perpetuity.
- Place a deed restriction to memorialize these controls in order to decrease the risk of future exposures with contaminated media consistent with remedial action objectives.

- The deed restriction will memorialize the remedial action and the existence of Engineering and Institutional Controls and will ensure that these controls will be appropriately managed by future owners of the Site.

3.1.2. Balancing Criteria

3.1.2.1. Compliance with Standards, Criteria and Guidance (SCGs)

The Track 1 alternative would address the chemical-specific SCGs for soil, groundwater and soil vapor by excavation and removal of all material above the Track 1 SCOs. Focused attention on means and methods employed during the remedial action would ensure that handling and management of contaminated material would be in compliance with applicable SCGs.

The Track 4 alternative (which includes the potential for a track 1 remedy over much of the property) would address the chemical-specific SCGs for soil, groundwater and soil vapor by establishment of site specific SCOs and excavation of soil and fill to 12 feet through most of the property and contaminant source areas above the SCOs. Similar to the Track 1 alternative, focused attention on means and methods employed during the remedial action would ensure that handling and management of contaminated material would be in compliance with applicable SCGs.

3.1.2.2 Short-term effectiveness and impacts

This evaluation criterion assesses the effects of the alternative during the construction and implementation phase until remedial action objectives are met. Under this criterion, alternatives are evaluated with respect to their effects on public health and the environment during implementation of the remedial action, including protection of the community during remedial actions, environmental impacts, time until remedial response objectives are achieved, and protection of workers during remedial actions.

The Track 1 alternative would result in slightly more significant short-term impacts due to the slightly larger quantity of excavation and transport required to remove all historic fill and other material necessary to achieve Track 1 SCOs throughout the Site. These impacts could include higher air quality impacts caused by greater soil excavation, handling and load out, and associated truck traffic. Similar impacts would be associated with import of backfill. Focused

attention to means and methods employed during the remedial action, including community air monitoring and appropriate truck routing, would minimize or negate the overall impact of these activities.

The Track 4 alternative (with the potential for a Track 1 remedy over much of the property) would result in slightly fewer short-term impacts associated with excavation, handling, load out of materials, and truck traffic. Construction of a vapor barrier and ventilated parking garage would not result in any negative short-term impacts. Focused attention to means and methods during the remedial action, including community air monitoring and appropriate truck routing, would minimize or negate the overall impact of these activities.

3.1.2.3 Long-term effectiveness and permanence

This evaluation criterion addresses the results of a remedial action in terms of its permanence and quantity/nature of waste or residual contamination remaining at the Site after response objectives have been met, such as permanence of the remedial alternative, magnitude of remaining contamination, adequacy of controls including the adequacy and suitability of ECs/ICs that may be used to manage contaminant residuals that remain at the Site and assessment of containment systems and ICs that are designed to eliminate exposures to contaminants, and long-term reliability of Engineering Controls.

The Track 1 alternative would be effective over the long-term by providing a permanent cleanup of on-Site contamination through removal of all soils in excess of the Track 1 SCOs and would eliminate any potential on-Site sources of soil vapors and groundwater contamination consistent with remedial action objectives.

The Track 4 alternative would also be effective over the long-term by removing soil and fill to a depth of 12 feet below most of the property and areas above soil cleanup objectives, placement of a final cover over the entire Site, establish use restrictions, establish a Site Management Plan to ensure long-term management of Institutional and Engineering Controls, and placement of a deed restriction to memorialize these controls for the long term. Removal of soil and fill to 12 feet would eliminate contaminant source areas and minimize the risk of leaching into groundwater and contact with or exposures to groundwater with contamination derived from on-Site consistent with remedial action objectives. Soil and fill removal would also

minimize potential sources for on-Site production of soil vapors, migration of on-Site-derived vapors, and the ventilated parking garage would prevent migration of on-Site and off-Site derived vapors into occupied structures and eliminate associated inhalation exposures consistent with remedial action objectives. Groundwater use restrictions will eliminate potential exposure to groundwater and establishment of a SMP and a deed restriction will ensure that this protection remains effective for the long-term (in perpetuity). The vapor barrier and ventilated parking garage will have the added benefit of providing protection against possible future migration of soil vapors from off-Site sources. The SMP will ensure long-term effectiveness of all Engineering and Institutional Controls by requiring periodic inspection and certification that these controls and use restrictions continue to be in place and functioning as they were intended assuring that protections designed into the remedy will provide continued high level of protection in perpetuity.

3.1.2.4 Reduction of toxicity, mobility, or volume of contaminated material

This evaluation criterion assesses the remedial alternative's use of treatment technologies that permanently and significantly reduce toxicity, mobility, or volume of contaminants as their principal element. The following is the hierarchy of source removal and control measures that are to be used to remediate a Site, ranked from most preferable to least preferable: removal and/or treatment, containment, elimination of exposure and treatment of source at the point of exposure. It is preferred to use treatment or removal to eliminate contaminants at a Site, reduce the total mass of toxic contaminants, cause irreversible reduction in contaminants mobility, or reduce of total volume of contaminated media.

The Track 1 alternative will provide maximum reduction of toxicity, mobility and volume of contaminated material on-Site by excavation and removal of all soils that exceed the Track 1 unrestricted use SCOs.

The Track 4 alternative will provide:

- Reduction of toxicity, mobility and volume of contaminated material on-Site by excavation and removal of soil and fill to a depth of 12 feet over most of the property and soil/fill that exceed site-specific SCOs;

- Removal of soil and fill that will reduce the potential for migration of contaminants in groundwater and soil vapor;
- Operation of a vapor barrier and sub-slab depressurization system or ventilated parking garage that will eliminate the potential for migration of soil vapors into the building;
- Placement of a cover over the entire Site that will lower toxicity by eliminating potential contact with remaining soil below the site specific SCOs;
- Groundwater use restrictions will reduce toxicity by ensuring that there is no direct contact with on-Site groundwater in the future;
- Establishment of a Site Management Plan and placement of a deed restriction to memorialize these controls will ensure long-term management of these Engineering and Institutional Controls and provide assurance that protective levels of toxicity and mobility will continue in perpetuity.

3.1.2.5 Implementability

This evaluation criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during its implementation, including technical feasibility of construction and operation, reliability of the selected technology, ease of undertaking remedial action, monitoring considerations, administrative feasibility (e.g. obtaining permits for remedial activities), and availability of services and materials.

The Track 1 alternative is both feasible and implementable. It uses standard materials and services and well established technology. The reliability of the remedy is high. There are no special difficulties associated with any of the activities proposed but will require a long period of time to accomplish due to the large quantity of soil and fill material that would require removal.

Similarly, the Track 4 alternative is also both feasible and implementable. It uses standard materials and services and well established technology. The reliability of the remedy is also high. There are no special difficulties associated with any of the activities proposed, which utilize standard industry methods.

3.1.2.6. Cost effectiveness

This evaluation criterion addresses the cost of alternatives, including capital costs (such as construction costs, equipment costs, and disposal costs, engineering expenses) and site management costs (costs incurred after remedial construction is complete) necessary to ensure the continued effectiveness of a remedial action.

The capital costs for the Track 1 alternative is 1 million dollars and is slightly higher than the costs for the Track 4 alternative (with the potential for Track 1 for most of the property). Higher costs are driven by higher total volume of soil/fill that would be excavated and transported from the Site and disposed of at an off-Site location.

Both alternatives satisfy the threshold balancing criterion and other criterion listed here, and each is fully protective of public health and the environment, will control migration of contaminants, will comply with SCGs, are effective for the short-term and long-term, are implementable, and reduces both mobility and toxicity.

3.1.2.7 Community Acceptance

This evaluation criterion addresses community opinion and support for the remedial action. Observations here will be supplemented by public comment received on the RAWP.

Based on the overall goals of the remedial program and initial observations by the project team, both of the alternatives are acceptable to the community. This RAWP will be subject to and undergo public review under the NYC BCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedial action. This public comment will be considered by OER prior to approval of this plan.

3.1.2.8 Land use

This evaluation criterion addresses the proposed use of the property. This evaluation has considered reasonably anticipated future uses of the Site and takes into account: current use and historical and/or recent development patterns; applicable zoning laws and maps; NYS Department of State's Brownfield Opportunity Areas (BOA) pursuant to section 970-r of the general municipal law; applicable land use plans; proximity to real property currently used for

residential use, and to commercial, industrial, agricultural, and/or recreational areas; environmental justice impacts, Federal or State land use designations; population growth patterns and projections; accessibility to existing infrastructure; proximity of the site to important cultural resources and natural resources, potential vulnerability of groundwater to contamination that might emanate from the site, proximity to flood plains, geography and geology; and current Institutional Controls applicable to the site.

Both alternatives for remedial action at the site are comparable with respect to the proposed use and to land uses in the vicinity of the Site. The proposed use is consistent with the existing zoning designation for the property and is consistent with recent development patterns. The Site is surrounded by residential, commercial and industrial property and both alternatives provide comprehensive protection of public health and the environment for these uses. Improvements in the current brownfield condition of the property achieved by both alternatives are also consistent with the City's goals for cleanup of contaminated land and bringing such properties into productive reuse. Both alternatives are equally protective of natural resources and cultural resources. This RAWP will be subject to undergo public review under the NYC BCP and will provide the opportunity for detailed public input on the land use factors described in this section. This public comment will be considered by OER prior to approval of this plan.

3.1.2.9. Sustainability of the remedial action

This criterion evaluates the overall sustainability of the remedial action alternatives and the degree to which sustainable means are employed to implement the remedial action including those that take into consideration NYC's sustainability goals defined in *PlaNYC: A Greener, Greater New York*. Sustainability goals may include: minimizing energy consumption and greenhouse gas emissions; improving energy efficiency; maximizing the recycling and reuse of non-virgin materials; reducing the consumption of virgin and non-renewable resources; and promotion of the use of native vegetation and enhancing biodiversity during landscaping associated with Site development.

Both alternatives have the potential to utilize sustainable means to achieve the cleanup goals. This program contemplates the utilization of several green remediation methods that are equally

compatible with either alternative. The full list of green remediation activities considered in this program is included in the Sustainability Statement.

4.0 REMEDIAL ACTION

4.1 SUMMARY OF PREFERRED REMEDIAL ACTION

The preferred remedial alternative is the Track 1 Alternative through the excavation and disposal of all contaminated soil present at the two Sites to depth of approximately 13 feet below grade. The petroleum spill beneath Lot 35 will be remediated under an approved RAP under the authority of NYS DEC and will be administered separately from this remedial action. Dissolved petroleum constituents in groundwater will be managed within a bioremediation program, a soil vapor barrier will be installed beneath the proposed building and a fully ventilated sub-grade parking garage will be built at the base of the building below grade. The preferred remedy achieves protection of public health and the environment for the intended use of the property. The preferred remedial action alternative achieves all of the remedial action objectives established for the project and addresses applicable SCGs. The preferred remedial action alternative is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants. The preferred remedial action alternative is cost effective, implementable and uses standards methods that are well established in the industry.

The different elements to be implemented during the Site remediation will include:

1. Performance of all required NYC BCP citizen participation activities according to an approved Citizen Participation Plan (CPP).
2. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
3. Performance of Community Air Monitoring Program for particulates and volatile organic carbon compounds.
4. Implementation of storm-water pollution prevention measures.
5. Performance of all activities associated with the remedial action, including permitting requirements and pretreatment requirements, will be addressed in accordance with all applicable Federal, State and City laws and regulations.
6. Establishment of Track 1 Soil Cleanup Objectives (SCOs).

7. Excavation and removal of soil/fill exceeding Track 1 SCOs. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with all Federal, State and City laws and regulations for handling, transport, and disposal. Track 4 SCOs will be established in the event that a Track 1 cleanup can be accomplished.
8. Sampling and analysis of excavated media as required by disposal facilities.
9. Excavation of contaminated media from areas of concern identified during RI.
10. Appropriate segregation of excavated media.
11. Collection and analysis of end-point samples to evaluate the performance of the remedy with respect to attainment of SCOs.
12. Removal of Underground Storage Tanks that may be encountered during the soil excavation under proper authority and their proper registration with the NYSDEC Petroleum Bulk Storage (PBS) unit.
13. The closure of petroleum spills under authority of New York State Department of Environmental Conservation. The NYSDEC has approved plans known as Remedial Action Plan dated February 24, 2010, Groundwater Remediation Action Plan dated July 15, 2010 and Vapor Barrier Design Specifications dated August 5, 2010, which describe the remediation of soil and groundwater on Lot 35. The NYSDEC approval letters are provided in Appendix 1. The Groundwater Remedial Action Plan is provided in Appendix 6. The Vapor Barrier Design Specifications are provided in Appendix 8.
 - a. Injection of oxygen release compound and performance of post-remedial monitoring for volatile organic compounds, semi-volatile organic compounds and aquifer parameters to evaluate the effectiveness of the treatment. This work is being performed under the approval of the NYSDEC.
 - b. Installation of a continuous vapor barrier beneath the entire building slab to prevent human exposure to residual soil vapor remaining under the Sites; this work is being performed under the approval of the NYSDEC. In addition, the basement of the building will consist of a ventilated sub-grade parking garage that will also prevent the buildup of any vapors within the structure.

- c. Excavation and removal of soil containing gasoline compounds exceeding Track 1 SCOs. Transportation and off-Site disposal of all soil containing gasoline compounds exceeding Track 1 SCOs material at permitted facilities in accordance with all Federal, State and City laws and regulations for handling, transport, and disposal. This work is being performed under the approval of the NYSDEC.
14. Screening for indications of contamination (by visual means, odor, and monitoring with a photo ionization detector (PID)) of excavated soil/fill during all intrusive work.
 15. Import of materials to be used for backfill and cover in compliance with OER approved plan and in accordance with all Federal, State and City laws and regulations.
 16. Placement of backfill material behind foundation walls.
 17. If Track 1 cannot be achieved, recording of a Declaration of Covenants and Restrictions that includes a full listing of Engineering Controls and Institutional Controls and notice that these controls must be maintained within a Site Management Plan to prevent future exposure to any residual contamination remaining at the Site.
 18. If Track 1 cannot be achieved, establishment in a recorded Declaration of Covenants and Restrictions, a series of Institutional Controls on the Site, including: (1) compliance with the provisions of the recorded Declaration of Covenants and Restrictions; (2) compliance with provisions of the approved Site Management Plan; (3) operation and maintenance of Engineering Controls as specified in the Site Management Plan; (4) inspection and certification of all Engineering Controls at a frequency and in a manner defined in the Site Management Plan; (5) performance of environmental and public health monitoring as defined in the Site Management Plan; (6) reporting at a frequency and in a manner defined in the Site Management Plan; (7) protection of on-Site monitoring devices in a manner specified in the SMP; and (8) prohibition of discontinuation of Engineering Controls without an OER-approved amendment or extinguishment of the Declaration of Covenants and Restrictions.
 19. If a Track 1 remedy cannot be achieved, establishment in a recorded Declaration of Covenants and Restrictions, a series of site restriction Institutional Controls on the Site, including: (1) prohibition of vegetable gardening and farming; (2) prohibition of the use

of groundwater without treatment rendering it safe for the intended use; (3) prohibition on all disturbance of residual contaminated material unless it is conducted in accordance with the provisions in the Site Management Plan; and (4) prohibition on higher level of land usage without an OER-approved amendment or extinguishment of this Declaration of Covenants and Restrictions.

20. Submission of a RAR which describes the remedial activities including any changes from this RAWP, certifies that the remedial requirements have or will be achieved, defines the Site boundaries, and describes any Engineering and Institutional Controls to be implemented at the Site.
21. If Track 1 Objective is not achieved, an approved Site Management Plan will be submitted in the Remedial Action Report for long-term management of residual contamination, including plans for Institutional and Engineering Controls for: (1) inspection and certification, (2) monitoring, (3) operation and maintenance, and (4) reporting.

Remedial activities will be performed at the Site in accordance with this OER-approved RAWP. All deviations from the RAWP will be promptly reported to OER. Changes will be documented in the RAR.

4.2 SOIL CLEANUP OBJECTIVES AND MATERIALS REMOVAL

Track 1 cleanup standards are proposed for this project. The Soil Cleanup Objectives (SCOs) for this Site are listed in Table 1. All soil samples that exceed the Track 1 SCOs proposed for this remedial action are highlighted in Table 2 and shown on a spider map in Figure 5. The map also shows the expected lateral extent of excavations proposed for removal under this remedial action.

Soil and materials management on-Site and off-Site will be conducted in accordance with the soil management plan as described below. Any residual sources of contaminants (such as hotspots) identified during the remedial action will be identified by GPS or surveyed by a

surveyor licensed to practice in the State of New York. This information will be provided on maps in the Remedial Action Report.

4.3 ESTIMATED MATERIAL REMOVAL AND IMPORT QUANTITIES

The total quantity of soil and fill material expected to be disposed off the sites is approximately 4,000 tons. Approximately, 2,300 tons will be disposed as contaminated soil as petroleum treatment facility. Approximately, 1,700 tons will be disposed as fill material will be disposed at a solid waste landfill.

The estimated quantity of soil to be imported into the Site for backfill and cover soil is 961 tons.

4.4 POST EXCAVATION END-POINT SAMPLING

Soil and fill material to be removed under this remedial action will be performed in conjunction with remedial performance end-point sampling. Sampling will be performed promptly following materials removal and testing completed prior to Site development activities.

4.4.1 End-Point Sampling Frequency

End-point sampling frequency will consist of the following:

1. For excavations less than 20 feet in total perimeter, at least one bottom sample and one sidewall sample biased in the direction of surface runoff.
2. For excavations 20 to 300 feet in perimeter:
 - For surface removals, one sample from the top of each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.
 - For subsurface removals, one sample from each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.

Post-remediation sample locations and depth will be biased towards the areas and depths of highest contamination identified during previous sampling episodes unless field indicators such

as field instrument measurements or visual contamination identified during the remedial action indicate that other locations and depths may be more heavily contaminated. In all cases, post-remediation samples will be biased toward locations and depths of the highest expected contamination.

End-point samples will be collected at the bottom of the 13 foot site-wide excavation.

4.4.2 Analytical Methodology

All end-point sample analyses will utilize the following methodology:

- volatile organic compounds (VOCs) by EPA Method 8260;
- semi-volatile organic compounds (SVOCs) by EPA Method 8270;
- Target Analyte List (TAL) metals; and
- pesticides/PCBs by EPA Method 8081/8082.

Groundwater samples will be analyzed as required by NYSDEC for the spill remediation.

4.4.3 Reporting of End-Point Data in Remedial Action Report

Chemical labs used for all end-point sample analytical results will be reported in the RAR. The RAR will provide a tabular and map summary of all end-point sample results.

5.0 REMEDIAL ACTION MANAGEMENT

5.1 PROJECT ORGANIZATION

Principal personnel who will participate in the remedial action include Paul I. Matli, Senior Project Manager and Rachel Ataman, Vice President.

5.2 PROGRAM OVERSIGHT

The Qualified Environmental Professional (QEP) for this project is Mark E. Robbins.

5.3 SITE SECURITY

Site access will be controlled by the Applicant through gated entrances to the fenced property. Barriers will be installed around work areas as needed to delineate and restrict access to the work area. For work areas of limited size, barrier tape will be sufficient to delineate and restrict access. For larger worker areas, temporary fencing will be provided.

5.4 WORK HOURS

The hours for operation of remedial construction will conform to the New York City Department of Buildings construction code requirements or according to specific variances issued by that agency.

5.5 CONSTRUCTION HEALTH AND SAFETY PLAN (HASP)

The Health and Safety Plan is included in Appendix 3. The Site Safety Coordinator will be Paul I. Matli, who is Qualified Environmental Professional (QEP). All remedial work performed under this RAWP will be in full compliance with all applicable laws and regulations, including Site and OSHA worker safety requirements and HAZWOPER requirements. Confined space entry, if any, will comply with all OSHA requirements and industry standards and will address potential risks. The parties performing the remedial construction work will ensure that performance of work is in compliance with the HASP and all applicable laws and regulations. The HASP pertains to all remedial and invasive work performed at the Site until the issuance of the Notice of Completion.

5.6 WORKER TRAINING AND MONITORING

All field personnel involved in remedial activities will participate in all training required under 29 CFR 1910.120, includes 40-hour hazardous waste operator training and annual 8-hour refresher training. Site Safety Officer will be responsible for maintaining all workers training records.

All personnel entering the exclusion zone will be trained in the provisions of the HASP and be required to sign an HASP acknowledgment. Site-specific training will be provided to all field personnel. Additional safety training may be added depending on the tasks performed. Emergency telephone numbers will be posted at the site location before any remedial work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a log book or specific form.

5.7 EMERGENCY CONTACT INFORMATION

An emergency contact sheet with names and phone numbers is included in the HASP. That document will define the specific project contacts for use by OER and NYC DOHMH in the case of emergency.

5.8 COMMUNITY AIR MONITORING PLAN

Real-time air monitoring for volatile organic compounds (VOCs) and particulate levels at the perimeter of the exclusion zone or work area will be performed. Continuous monitoring will be performed for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pit excavation or trenching, lagging, shoring and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be performed during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. Periodic monitoring during sample collection, for instance, will consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. Depending upon the proximity of potentially exposed individuals, continuous monitoring may be performed during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence. Exceedences of action levels observed during performance of the Community Air Monitoring Plan (CAMP) will be reported to the OER Project Manager and included in the Daily Report.

5.8.1 VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis during invasive work. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

All 15-minute readings must be recorded and be available for OER personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

5.8.2 Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed $150 \text{ mcg}/\text{m}^3$ above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than $150 \text{ mcg}/\text{m}^3$ above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within $150 \text{ mcg}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

All readings will be recorded and be available for OER personnel to review.

5.9 AGENCY APPROVALS

All permits or government approvals required for remedial construction have been or will be obtained prior to the start of remedial construction. Approval of this RAWP by OER does not constitute satisfaction of these requirements and will not be a substitute for any required permit.

5.10 SITE PREPARATION

5.10.1 Pre-Construction Meeting

OER will be invited to attend the pre-construction meeting at the Site with all parties involved in the remedial process prior to the start of remedial construction activities.

5.10.2 Mobilization

The first step in site preparation is mobilization. Mobilization will be conducted as necessary for each phase of work at the Site. Mobilization includes field personnel orientation, equipment mobilization (entail securing all sampling equipment needed for the field investigation), marking/staking sampling locations and utility mark-outs. Each field team member will attend an orientation meeting to become familiar with the general operation of the Site, health and safety requirements, and field procedures.

5.10.3 Stabilized Construction Entrance

Steps will be taken to ensure that trucks departing the site are not tracking soil off-Site. Such actions may include use of cleaned asphalt or concrete roads or use of stone or other aggregate-based egress paths between the truck wash and the property exit. Measures will be taken to ensure that adjacent roadways will be kept clean of project related soils, fill and debris.

5.10.4 Utility Marker Layouts, Easement Layouts

The presence of utilities and easements on the Site will be fully investigated prior to the performance of invasive work such as excavation or drilling under this plan by using, at a minimum, the One-Call System (811). Underground utilities may pose an electrocution, explosion, or other hazard during excavation or drilling activities. Utility companies and other

responsible authorities will be contacted to locate and mark the locations, and a copy of the Markout Ticket will be retained by the contractor prior to the start of drilling, excavation or other invasive subsurface operations. Overhead utilities may also be present throughout the anticipated work zones. Electrical hazards associated with drilling in the vicinity of overhead utilities will be minimized by maintaining a safe distance between overhead power lines and drill rig mast

Proper safety and protective measures pertaining to utilities and easements, and compliance with all laws and regulations will be employed during invasive and other work contemplated under this RAWP. The integrity and safety of on-Site and off-Site structures will be maintained during all invasive, excavation or other remedial activity performed under the RAWP.

5.10.5 Dewatering

Excavations that extend below the water table may require dewatering. Submersible pumps will be used to extract groundwater from gravel lined sumps in the excavations or a system of well points will be used for groundwater extraction. Extracted groundwater will be conveyed to a storage tank or treatment system.

Depending on the selected discharge option, a NYC DEP sewer use permit will be obtained to discharge groundwater from Lot 38 to the combined sewers network located at the corner of Westchester Avenue and Rogers Place. Contaminated liquid generated during dewatering activities will be temporarily stored in on-site containers. This liquid will then be disposed of into vacuum trucks at a waste disposal facility in accordance to City, State and Federal laws and regulations.

5.10.6 Equipment and Material Staging

Equipment and materials will be stored and staged in a manner that is consistent with City, State, and Federal regulations.

A Site map showing the location(s) of proposed equipment and material staging areas, truck wash, stockpile areas, and other pertinent remedial management features is shown in Figure 6.

5.10.7 Decontamination Area and Truck Wash

A decontamination area will be established on the project site.

A truck decontamination pad will be set up close to Site exit. Before exiting the NYC BCP Site, transport vehicles will be required to stop at the decontamination pad and will be inspected for evidence of contaminated soil on the undercarriage, body, and wheels. Soil will be removed on the decontamination pad. After wetting with potable water, brooms or shovels will be utilized for the bulk removal of soil from vehicles and equipment. The decontamination procedure for the removal of the remaining soil and liquids will consist of washing with potable water. Odor suppressant foam will be applied, if necessary, to control emissions from soil in trucks.

Soil generated by the decontamination process will be stockpiled and tested, and based on the results of the testing will be either reused on-Site or transported off-Site for disposal.

5.11 DEMOBILIZATION

Demobilization will include:

- As necessary, restoration of temporary access areas and areas that may have been disturbed to accommodate support areas (e.g., staging areas, decontamination areas, storage areas, temporary water management area[s], and access area);
- Removal of sediment and erosion control measures and disposal of materials in accordance with applicable laws and regulations;
- Equipment decontamination, and;
- General refuse disposal.

Equipment will be decontaminated and demobilized at the completion of all field activities. Investigation equipment and large equipment (e.g., soil excavators) will be decontaminated on the decontamination pad as necessary. In addition, all investigation and remediation derived waste (IDW) e.g., decontamination fluids, drill cuttings, recirculation water, well development purge water, etc. will be containerized in 55-gallon drums and staged for characterization at a secured location on-Site and will be appropriately disposed.

5.12 TRAFFIC CONTROL

Trucks leaving the NYC BCP Site will proceed without stopping in the neighborhood to prevent neighborhood impacts. The planned route on local roads for waste transport vehicles is presented on Figure 7.

5.13 REPORTING

All required reports will be included as an Appendix in the Remedial Action Report.

5.13.1 Daily Reports

Daily reports providing a summary of activities for each day of remedial work will be emailed to the OER Project Manager by the end of the following day. Those reports will include:

- A statement of the activities and an update of progress made;
- Locations of work performed;
- Quantities of material imported and exported from the Site;
- Status of on-Site soil/fill stockpiles;
- A summary of all citizen complaints, with relevant details (basis of complaint; actions taken; etc.);
- A summary of CAMP excursions;
- Photographs of notable Site conditions and activities.
- OER assigned project number.

The frequency of the reporting period may be revised in consultation with OER project manager based on planned project tasks. Daily email reports are not intended to be the primary mode of communication for notification to OER of emergencies (accidents, spills), requests for changes to the RAWP or other sensitive or time critical information. However, such information will be included in the daily reports. Emergency conditions and changes to the RAWP will be communicated directly to the OER project manager by personal communication.

An alpha-numeric site map will be used to identify locations described in reports submitted to OER and is attached in Figure 8. A sample copy of Daily Report is attached in Appendix 7.

5.14 RECORD KEEPING AND PHOTO-DOCUMENTATION

Job-site record keeping for all remedial work will be performed. These records will be maintained on-Site at all times during the project and will be available for inspection by OER staff. Representative photographs will be taken of the Site prior to any remedial activities and during all major remedial activities to illustrate remedial program elements and all contaminant source areas. Select photographs will be submitted everyday along with the daily reports. Photographs will be properly tagged and submitted at the completion of the project in the RAR on electronic media (jpeg files).

5.15 COMPLAINT MANAGEMENT

All complaints from citizens will be promptly notified to OER by phone and email. Complaints will be promptly addressed and will also be reported to OER in daily reports. These reports will include the nature of the complaint, the party providing the complaint, and the actions taken to resolve any problems. Complaints from the public will be addressed as appropriate through modifications to the remedial program.

5.16 DEVIATIONS FROM THE REMEDIAL ACTION WORK PLAN

All changes to the RAWP will be reported to the OER Project Manager and will be documented in daily reports and in the Remedial Action Report. The process to be followed if there are any deviations from the RAWP, at a minimum, will include a written submission to the OER with the following information:

- A request for OER approval regarding the deviation.
- Reasons for deviating from the approved RAWP; and
- Effect of the deviations on overall remedy.

6.2.1 DUSR

The Data Usability Summary Report (DUSR) provides a thorough evaluation of analytical data without third party data validation including post remedial samples. The primary objective of a DUSR is to determine whether or not the data meets the site/project specific criteria for data

quality and data use. The DUSR for post-remedial samples collected during implementation of this RAWP will be included in the Remedial Action Report (RAR).

6.0 SOILS/MATERIALS MANAGEMENT PLAN

6.1 SOIL SCREENING METHODS

Visual, olfactory and PID soil screening and assessment will be performed under the supervision of a Qualified Environmental Professional and will be reported in the RAR. Soil screening will be performed during all excavation and invasive work performed during the remedy and development phases, including excavations for foundations and utility work, prior to issuance of the Notice of Completion. It will be the responsibility of the PE/QEP certifying the remedy to provide technically competent field staff with proper experience to oversee all excavation activity. A description of experience of field staff will be provided to OER upon request.

6.2 STOCKPILE METHODS

Excavated soil from suspected areas of contamination and contaminated materials from different sources (e.g., hot spots, USTs, drains, etc.) will be stockpiled separately and will be segregated from other soil and construction materials. Soils with stumps, roots, and related matter also will be stockpiled separately from other soil and construction materials at the Sites.

Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Sites and available for inspection by OER. Excavated soils will be stockpiled on double layers of minimum of 8-mil sheeting, will be kept covered at all times with appropriately anchored plastic sheeting, and will be routinely inspected. Broken or ripped tarps will be promptly replaced. Stockpiles of excavated soils and other materials shall be located at least of 50 feet from the property boundaries, where possible. Hay bales will surround soil stockpiles except for areas where access by equipment is required. Silt fencing and, hay bales will be used as needed near catch basins, surface waters and other discharge points. Soil stockpile areas will be appropriately graded to control run-off in accordance with a Stormwater Pollution Prevention Plan (SWPPP) for the Sites.

6.3 CHARACTERIZATION OF EXCAVATED MATERIALS

Excavated materials for disposal offsite will be characterized in accordance with requirements of the disposal facility.

6.4 MATERIALS EXCAVATION, LOAD-OUT AND DEPARTURE

The PE/QEP will oversee all invasive work and the excavation and load-out of all excavated material and will ensure that there is a party responsible for the safe execution of all invasive and other work performed under this work plan.

The PE/QEP will ensure that Site development activities will not interfere with, or otherwise impair or compromise the remedial activities proposed in this RAWP. Development-related grading cuts will not interfere with, or otherwise impair or compromise, the performance of remediation required by this plan.

The presence of utilities and easements on the Site has been investigated by the PE/QEP who will ensure that any identified risks from work proposed under this plan are properly addressed by appropriate parties.

Loaded vehicles leaving the Site will comply with all applicable materials transportation requirements (including appropriate tarping, secure covering, manifests, and placards) in accordance with appropriate Federal, State, and City laws and regulations.

A decontamination pad will be maintained on-Site and the PE/QEP will be responsible for ensuring that all loaded outbound trucks are cleaned before leaving the Site. Locations where vehicles exit the Site shall be inspected daily for evidence of off-Site soil tracking. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials. The PE/QEP will be responsible for ensuring that all egress points for truck and equipment transport from the Site will be kept clean of Site-derived materials during Site remediation and development.

Open and uncontrolled mechanical processing of historical fill and contaminated soil on-Site will not be performed without prior OER approval.

6.5 OFF-SITE MATERIALS TRANSPORT

Loaded vehicles leaving the Site will comply with all applicable materials transportation requirements (including appropriate tarping, secure covering, manifests, and placards) in accordance with City, State, and Federal laws and regulations, including use of licensed haulers in accordance with 6 NYCRR Part 364. Loose or incomplete truck covers will be prohibited. If loads contain wet material capable of causing leakage from trucks, truck liners will be used. Queuing of trucks will be performed on-Site, when possible in order to minimize off Site disturbance. Off-Site queuing will be minimized.

Outbound truck transport routes are shown in Figure 7. This routing takes into account the following factors: (a) limiting transport through residential areas and past sensitive sites; (b) use of City mapped truck routes; (c) minimizing off-Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport. To the extent possible, all trucks loaded with Site materials will travel from the Site using these truck routes. Trucks will not stop or idle in the neighborhood after leaving the project Site.

6.6 MATERIALS DISPOSAL OFF-SITE

The following documentation will be established and reported by the PE/QEP for each disposal destination used in this project to document that the disposal of regulated material exported from the Site conforms with all applicable laws: (1) a letter from the PE/QEP or Enrollee to each disposal facility describing the material to be disposed and requesting written acceptance of the material. This letter will state that material to be disposed of is regulated material generated at an environmental remediation Site in the Borough of Bronx, New York City under a governmental remediation program. The letter will provide the project identity and the name and phone number of the PE/QEP or enrollee. The letter will include as an attachment a summary of all chemical data for the material being transported (including site characterization data); and (2) a letter from each disposal facility stating it is in receipt of the correspondence (above) and is approved to accept the material. These documents will be included in the RAR.

The Remedial Action Report will include an itemized account of the destination of all material removed from the Site during this remedial action. Documentation associated with

disposal of all material will include records and approvals for receipt of the material. This information will also be presented in the RAR.

The proposed disposal locations for Site-derived impacted materials are listed in Table 3. Additional disposal locations established at a later date will be reported promptly to the OER Project Manager.

Table 3 : Waste Soil Disposal Details

<u>Disposal Facility</u>	<u>Waste Type</u>	<u>Estimated Quantities</u>
Rodota Trucking and Excavating, LLC Belvidere, NJ	Demolition material at Lot 38	5,000 tons
97-135 Blanchard Street, Newark, NJ	Demolition material at Lot 38	1,500 tons
Phase III Environmental, Palmerton, PA	Contaminated Soil, Fill material at Lot 35	2,000 tons
Middlesex County Landfill, East Brunswick, NJ	Contaminated Soil, Fill material at Lot 35	1,500 tons
To be determined	Contaminated liquid from dewatering activities and other remedial activities	To be determined

All impacted soil/fill or other waste excavated and removed from the Site will be managed as regulated material and will be disposed in accordance with all City, State and Federal laws and regulations. Historic fill and contaminated soils taken off-Site will be handled, as solid waste and will not be disposed at a Part 360-16 Registration Facility (also known as a Soil Recycling Facility).

Unregulated off-Site management of materials from these Sites is prohibited.

Waste characterization will be performed for off-Site disposal in a manner required by the receiving facility and in conformance with applicable permits. Waste characterization sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the RAR. A Bill of Lading system or equivalent to oversee off-Site transportation of exported materials is required. This information will be reported in the RAR. Hazardous wastes derived

from on-Site will be stored, transported, and disposed of in full compliance with applicable City, State, and Federal laws and regulations.

6.7 MATERIALS REUSE ON-SITE

Soil and fill that is derived from the property will not be reused on-site. All concrete generated during soil excavation will be crushed off-site and re-used in the concrete mix during remedial construction. The OER will be consulted for their requirements to approve any such proceedings.

6.8 FLUIDS MANAGEMENT

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable City, State, and Federal laws and regulations. Discharge to the New York City sewer represents the preferred method for management of dewatering fluid during construction. Liquids discharged into the New York City sewer system will receive prior approval by New York City Department of Environmental Protection (NYC DEP). Discharge to the New York City sewer system will require an authorization and sampling data demonstrating that the groundwater meets the City's discharge criteria. The NYC DEP regulates discharges to the New York City sewers under New York City Department of Environmental Protection's Title 15, Rules of the City of New York (RCNY) Chapter 19. The dewatering fluid will be pretreated as necessary to meet the New York City Discharge criteria. If discharge to the City sewer system is not appropriate, the dewatering fluids will be managed by transportation and disposal at an off-Site treatment facility.

Discharge of water generated during remedial construction to surface waters (i.e. a stream or river) is prohibited without a SPDES permit issued by New York State.

6.9 DEMARCATION

Track 1 remediation is proposed and demarcation will not be required.

6.10 IMPORT OF BACKFILL SOIL FROM OFF-SITE SOURCES

This Section presents the requirements for imported fill materials to be used below the cover layer and within the clean soil cover layer. All imported soils will meet OER-approved Track 1 soil quality objectives for this Site. The backfill and cover soil quality objectives are listed in Table 1.

All materials received for import onto the Site will be approved by the PE/QEP and will be in compliance with provisions in this RAWP. The RAR will report the source of the fill, evidence that an inspection was performed on the source, chemical sampling results, frequency of testing, and a Site map indicating the locations where backfill was placed.

6.10.1 Source Screening and Testing

Inspection of imported fill material will include visual, olfactory and PID screening for evidence of contamination. Materials imported to the Sites will be subject to inspection, as follows:

- Trucks with imported fill material will be securely covered with tight fitting covers and will enter the Site at designated locations;
- The PE/QEP is responsible to ensure that every truck load of imported material will be inspected for evidence of contamination;
- Fill material will be free of solid waste including pavement materials, and debris, stumps, roots, and other organic matter, as well as ashes, oil and perishables or foreign matter; and
- Fill material will not contain any material greater than 12 inches in its greatest dimension.

Composite samples of imported material will be taken at a frequency of one sample for every 2,000 cubic yards of material. Once it is determined that the fill material is non-hazardous, and lacks petroleum contamination, the fill material will be loaded onto trucks for delivery to the Site.

Recycled concrete aggregate (RCA) may be imported from facilities permitted or registered by, and in full compliance with the regulations of NYSDEC. Facilities will be identified in the

RAR. The PE/QEP is responsible to ensure that the facility is compliant with 6NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require additional testing, unless required by NYSDEC under its terms for operation of the facility. RCA imported to the Sites must be derived from recognizable and uncontaminated concrete. RCA material is not acceptable for, and will not be used as, cover material.

6.11 STORM-WATER POLLUTION PREVENTION

All applicable laws and regulations pertaining to storm-water pollution prevention will be addressed during the remedial program. Erosion and sediment control measures identified in this RAWP (silt fences and barriers, and hay bale checks) will be installed around the entire perimeter of the remedial construction area and inspected once a week and after every storm event to ensure that they are operating appropriately. Where discharge locations or points are accessible, they will be inspected to determine whether erosion control measures are effective in preventing significant impacts to receptors. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. All necessary repairs shall be made immediately. Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. Undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

6.12 CONTINGENCY PLAN

A contingency plan is developed for the remedial construction to address the discovery of unknown structures or contaminated media during excavation. Identification of unknown or unexpected contamination source areas during invasive Site work will be promptly communicated to OER's Project Manager. Petroleum spills will be reported to the NYS DEC Spill Hotline. These findings will be included in the daily report. If previously unidentified contaminant sources are found during on-Site remedial excavation or development-related excavation, sampling will be performed on contaminated source material and surrounding soils and reported to OER. Chemical analytical testing will be performed for TAL metals, TCL volatiles and semi-volatiles, TCL pesticides and PCBs, as appropriate.

6.13 ODOR, DUST AND NUISANCE CONTROL

6.13.1. Odor Control

All necessary means will be employed to prevent on- and off-Site odor nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) use of foams to cover exposed odorous soils. If odors develop and cannot otherwise be controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-Site disposal; and (e) use of chemical odorants in spray or misting systems.

This odor control plan is capable of controlling emissions of nuisance odors. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. OER will be notified of all odor complaint events. Implementation of all odor controls, including halt of work, will be the responsibility of the PE/QEP certifying the Remedial Action Report.

6.13.2 Dust Control

Dust management during invasive on-Site work will include, at a minimum:

- Use of a dedicated on-Site water spray methodology for roads, excavation areas and stockpiles.
- Use of properly anchored tarps to cover stockpiles.
- Use of extra care during dry and high-wind periods.
- Use of gravel or recycled concrete aggregate on egress roadways to provide a clean and dust-free road surface.

This dust control plan is capable of controlling emissions of dust. If nuisance dust emissions are identified, work will be halted and the source of dusts will be identified and corrected. Work will not resume until all nuisance dust emissions have been abated. OER will be notified of all dust complaint events. Implementation of all dust controls, including halt of work, will be the responsibility of the PE/QEP responsible for certifying the Remedial Action Report.

6.13.3 Other Nuisances

Noise control will be exercised during the remedial program. All remedial work will conform, at a minimum, to NYC noise control standards.

Rodent control will be provided during Site clearing and grubbing, and during the remedial program, as necessary.

7.0 ENGINEERING AND INSTITUTIONAL CONTROLS

Since the Sites are expected to be remediated in compliance with the Track 1 SCO, Engineering Controls (EC) and Institutional Controls (IC) will not be required. However, if a Track 1 cannot be achieved, a Track 4 remedy will be implemented as a contingency plan. The SCOs will be the Track 2 SCOs for restricted residential identified in 6NYCRR Part 375-6.8. Therefore, Engineering Controls (EC) and Institutional Controls (IC) have been incorporated in this remedial action to manage any residual contamination under a contingency Track 4 remedial action to render the Site protective of public health and the environment. These ECs and ICs are described hereafter. Long-term employment of EC/ICs will be required by a Declaration of Covenant and Restrictions (DCR) assigned to the property by the title holder and will be implemented under a site-specific Site Management Plan (SMP) that will be included in the RAR.

7.1 INSTITUTIONAL CONTROLS

Institutional Controls can generally be subdivided into ICs that support the ECs listed in section 7.2 of this RAWP including those required to implement, maintain, monitor and report on those systems, and ICs that place general restrictions on Site usage. The ICs in this remedial action that support ECs are:

- A DCR including a description of all ICs and ECs and noting the requirements of the SMP will be registered with the City Register or county clerk, as appropriate. The DCR will note that the property owner and property owner's successors and assigns will comply with the DCR and all elements of the approved SMP;
- A SMP will be submitted in the RAR for approval by OER that provides procedures for appropriate operation, maintenance, monitoring, inspection, reporting and certification of all ECs.
- Grantor agrees to submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that

constitute a violation or failure to comply with the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that OER may allow. This certification must comply with RCNY §43-1407(1)(3).

Under this remedial action, the Site will be subject to a series of ICs in the form of site restrictions and requirements. These include:

- Vegetable gardens and farming on the Sites are prohibited;
- Use of groundwater underlying the Sites are prohibited without treatment rendering them safe for its intended use;
- All future activities on the Sites that will disturb residual contaminated material must be conducted pursuant to the soil management provisions in the Site Management Plan;
- The Sites will be used for residential, commercial, and community use only and will not be used for a higher level of use without prior notice to OER;
- On-Site environmental monitoring devices, including but not limited to, groundwater monitor wells and soil vapor probes, must be protected and replaced as necessary to ensure proper functioning in the manner specified in the SMP.

7.1.1 Declaration of Covenants and Restrictions

An OER-approved Declaration of Covenants and Restrictions (DCR) will be registered with the City Register or the country clerk, as appropriate to ensure that the grantor of the DCR and the grantor's successors and assigns implement the ICs and ECs required under this remedy. The registered DCR will be submitted as part of the Remedial Action Report. The DCR must be registered prior to OER issuance of the Notice of Completion.

7.1.2 Site Management Plan

Site Management is the last phase of remediation and begins with the approval of the Remedial Action Report and issuance of the Notice of Completion (NOC) for the Remedial Action. The Site Management Plan (SMP) describes appropriate methods and procedures to

ensure implementation of all ECs and ICs that are required by the DCR and this RAWP. The Site Management Plan is submitted as part of the RAR but will be written in a manner that allows its use as an independent document. The Site Management Plan in the Remedial Action Report will include a monitoring plan for groundwater at the downgradient Site perimeter to evaluate Site-wide performance of the remedy. Site Management continues until terminated in writing by OER. The property owner is responsible to ensure that all Site Management responsibilities defined in the DCR and the Site Management Plan are implemented.

The SMP will provide a detailed description of the procedures required to manage residual contamination left in place following completion of the remedial action in accordance with the BCA with OER. This includes: (1) development, implementation, and management of all ICs and ECs; (2) development and implementation of monitoring systems; (3) development of a plan to operate and maintain any treatment, collection, containment, or recovery systems; (4) submittal of reports, performance of inspections and certification of results, and demonstration of proper communication of Site information to OER; and (5) defining criteria for termination of treatment system operation.

To address these needs, the SMP will include four sections: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site Monitoring; (3) an Operation and Maintenance Plan for implementation of remedial collection, containment, treatment, and recovery systems, and; (4) a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to OER. The SMP will be prepared in accordance with the requirements in NYS DEC DER-10 Technical Guidance for Site Investigation and Remediation and the guidelines provided by OER.

Site management activities, reporting, and EC/IC certification will be scheduled on a certification period basis. The certification period will be every two years. The Site Management Plan will be based on a calendar year and will be due for submission to OER by March 31 of the year following the reporting period.

7.2 ENGINEERING CONTROL SYSTEMS

7.2.1 Composite Cover System

Exposure to residual contaminated soils will be prevented by an engineered cover system that will be placed over the surface of the entire area of both sites. This cover system will be comprised of the building slab beneath the entire property.

This cover system is as a permanent engineering control for the Site. The Systems will remain in place and operational for the life of the building. An interim Soil Management Plan for any residual soil beneath the cover system will be included in the Site Management Plan and will outline the procedures to be followed in the event that the cover system and underlying residual contamination are disturbed after the remedial action is complete. Maintenance of this composite cover system will be described in the Site Management Plan in the RAR.

A soil vapor barrier and ventilated parking garage will also be constructed and will be managed under the SMP.

8.0 REMEDIAL ACTION REPORT

A Remedial Action Report (RAR) will be submitted to OER following implementation of the remedial action defined in this RAWP. The RAR will document that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan. The RAR will include:

- As-built drawings for all constructed remedial elements, required certifications, manifests, bills of lading and other written and photographic documentation of remedial work performed under this remedy;
- Site Management Plan if Track 1 SCO is not achieved;
- Description of any changes in the remedial action from the elements provided in the RAWP and associated design documents;
- Tabular summary of all performance evaluation sampling results and all material characterization results and other sampling and chemical analysis performed as part of the remedial action;
- Test results or other evidence demonstrating that remedial systems are functioning properly;
- Tabular summary and map of residual contamination that exceeds Track 1 and 2 6NYCRR Part 375-6.8 SCOs for restricted residential use;
- Account of the source area locations and characteristics of all contaminated material removed from the Site including excavated contaminated soil, historic fill, solid waste, hazardous waste, non-regulated material, and fluids, including the map(s) showing all source areas;
- Account of the disposal destination of all contaminated material removed from the Site and documentation associated with disposal of all material will include records and approvals for receipt of the material.
- Account of the origin and any required chemical quality testing for all material imported onto the Site.

- All reports and supporting material will be submitted in digital form (pdf format) and other digital formats as required by OER.

8.1 REMEDIAL ACTION REPORT CERTIFICATION

The following certification will appear in front of the Executive Summary of the Remedial Action Report. The certification will include the following statements:

I, Shaik A. Saad, am currently a registered professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the [1600 Pelham Parkway] Site [Site No. 11CBCPxxxX].

I, Mark E. Robbins, am a qualified Environmental Professional. I had primary direct responsibility for implementation of Remedial Action Work Plan.

I certify that the Site description presented in this RAR is identical to the Site descriptions and associated amendments presented in the Declaration of Covenants and Restrictions, the Site Management Plan, and the NYC Brownfield Cleanup Agreement for 920-924 Westchester Avenue.

I certify that the OER-approved Remedial Action Work Plan dated [month day year] and Stipulations were implemented and that all requirements in those documents have been substantively complied with.

I certify that the remedial activities were observed by qualified professionals under my supervision and that the remediation requirements set forth in the Remedial Action Work Plan have been achieved.

I certify that the export of all contaminated soil, fill, liquids or other material from the property was performed in accordance with the Remedial Action Work Plan, and that the materials were taken to facilities licensed to accept this material in full compliance with Federal, State and City laws and regulations.

I certify that all import of soils from off-Site has been performed in a manner that is consistent with the methodology defined in the Remedial Action Work Plan.

I certify that all information and statements in this certification are true. I understand that a false statement made herein is punishable as Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

Include below only if Track 1 is not achieved:

I certify that all use restrictions, Institutional Controls and Engineering Controls identified in the RAWP, and all operation and maintenance requirements applicable to the Site are contained in a Declaration of Covenants and Restrictions and that such declaration and covenant has been recorded.

I certify that a Site Management Plan is included in this RAR that provides for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site.

9.0 SCHEDULE

A Remedial Action Project Schedule is provided under Appendix 9.



HYDRO TECH ENVIRONMENTAL CORP.

MAIN OFFICE: 2171 JERICO TURNPIKE, SUITE 345
 COMMACK, NEW YORK 11725
 T (631) 462-5866 F (631) 462-5877
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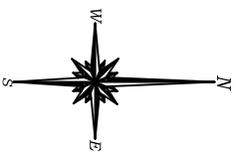
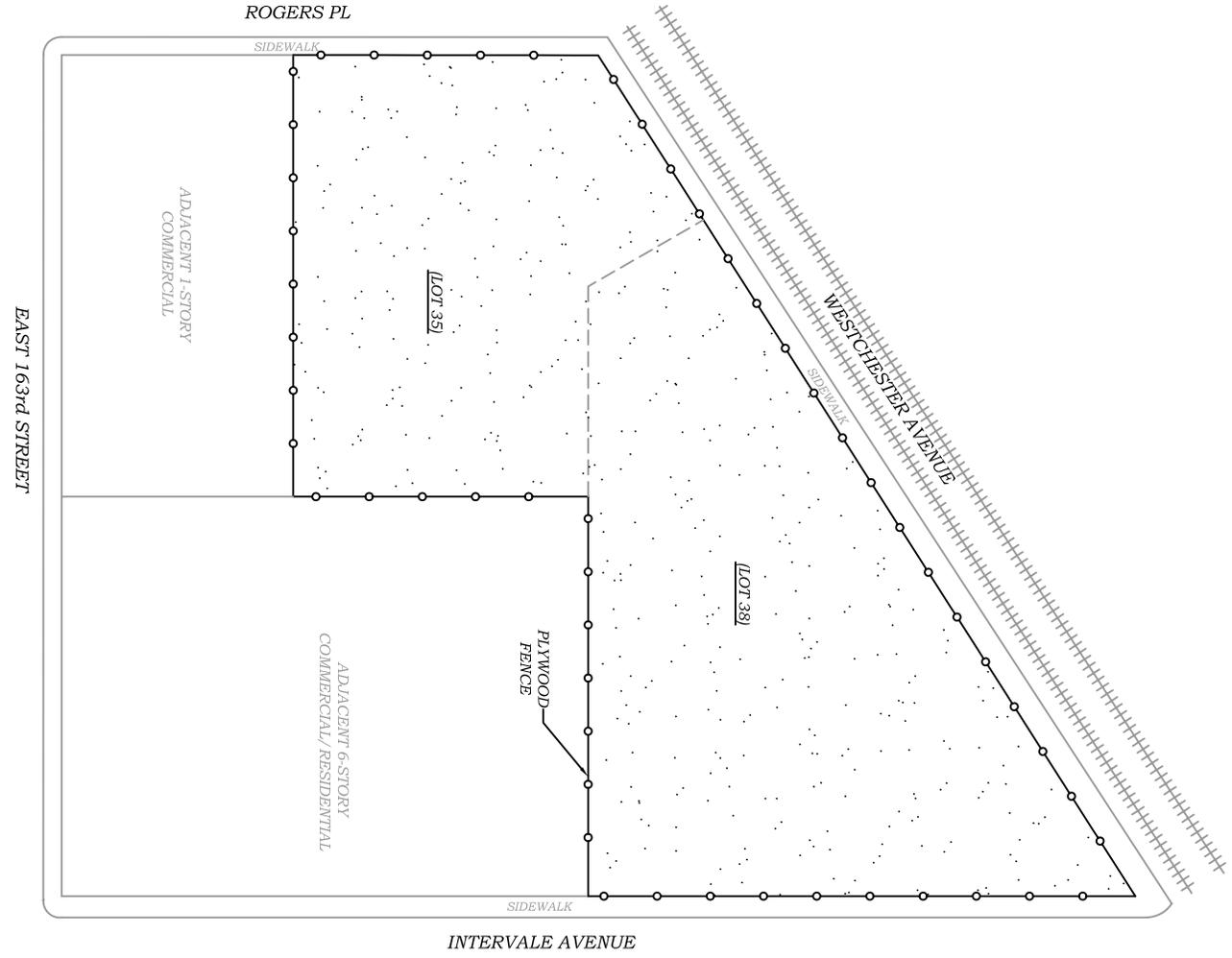
NYC OFFICE: 15 OCEAN AVENUE, 2nd Floor
 BROOKLYN, NEW YORK 11225
 T (718) 636-0800 F (718) 636-0900

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 Bronx, NY.

Drawn By:	CQ
Reviewed By:	MR
Approved By:	MS
Date:	07/19/10
Scale:	AS NOTED

TITLE:

FIGURE 1: SITE PLAN



- LEGEND:
- THE SITE
 - PLYWOOD FENCE
 - ELEVATED NYC TRANSIT RAILWAY





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 2171 JERICO TURNPIKE, SUITE 345
 COMMACK, NEW YORK 11725
 T (631)462-5866 F (631)462-5877
 www.hydrotechenvironmental.com

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 15 OCEAN AVENUE, 2nd Floor
 BROOKLYN, NEW YORK 11225
 T (718)656-0800 F (718)656-0900

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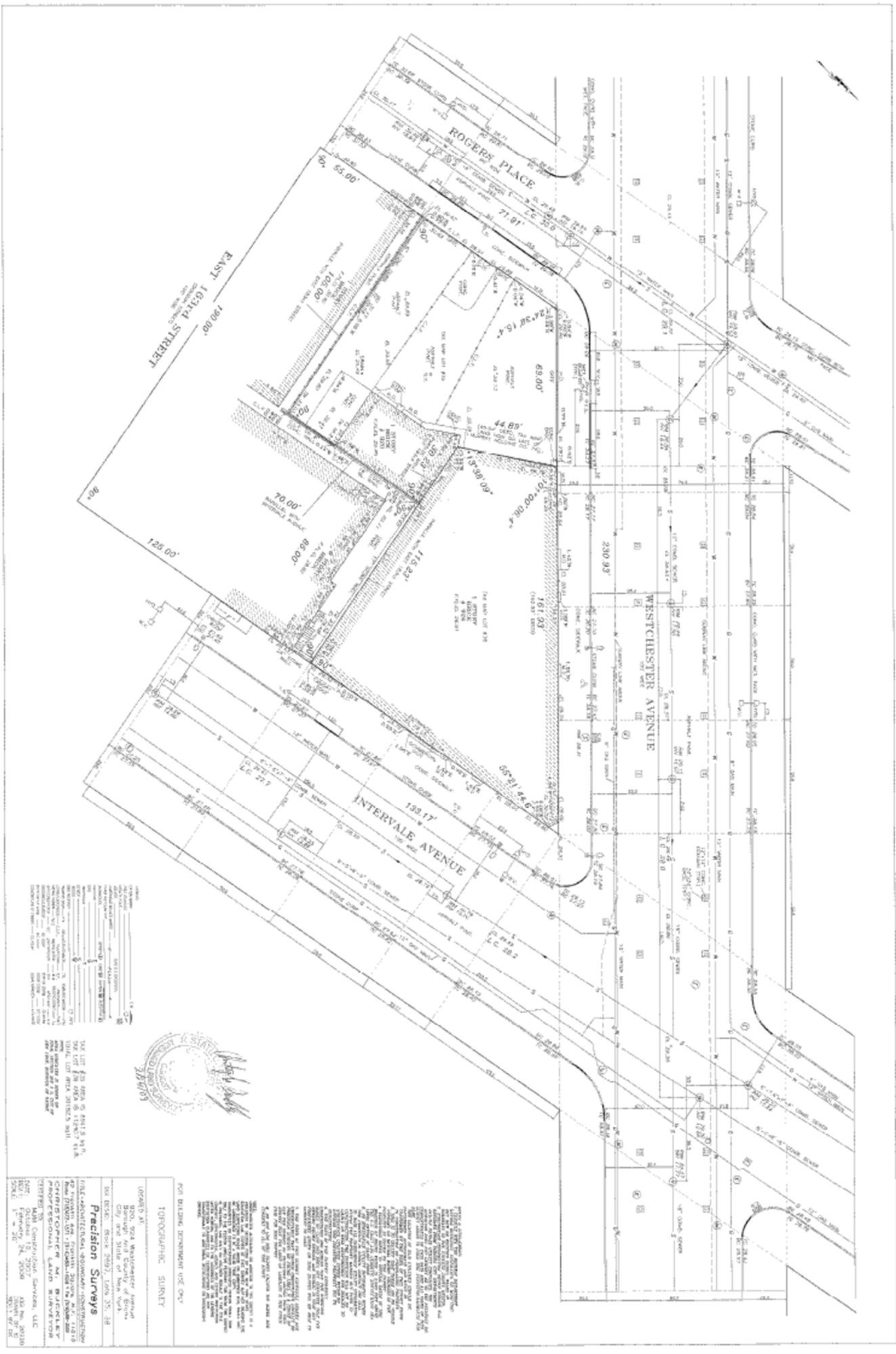


FIGURE 2: SITE BOUNDARY MAP



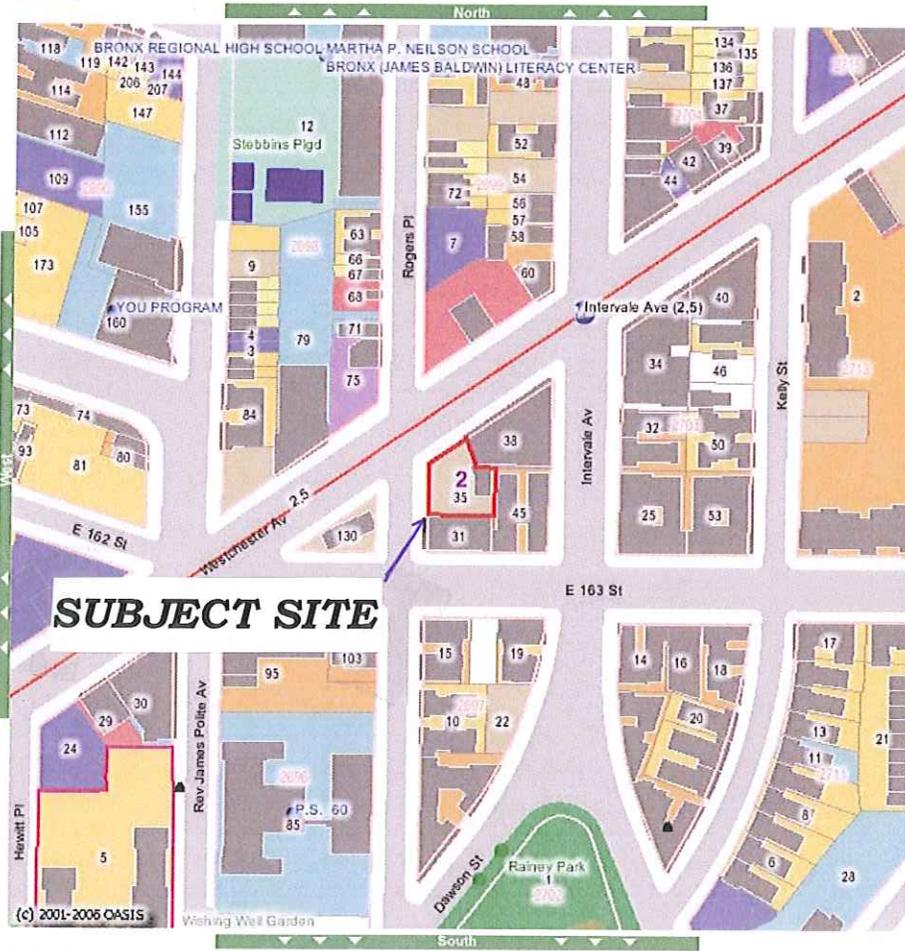
Search By Address Select

Redraw Map - zoom to selected area / show new data Help Select all layers Unselect all layers Garden Search Estuary Search

Select a tool (click on the icon) & click on the map:

Identify Zoom In Zoom Out Recenter Tag map Help Support

OASIS!



- Turn map layers on and off by clicking in the check boxes and then clicking on the Refresh Map button
- Photos & Imagery (view 1 at a time)
 - Aerial Photo (2004) *New* (more info)
 - Aerial Photo (1996)
 - Infrared Aerial Photo (2001)
 - Classified Landcover (2001)
 - Tree/Forest
 - Grassland
 - Impervious/Other
 - Water
- Boundaries & Labels
 - Town/Neighborhood
 - County / Borough
 - Waterbody Labels
 - 6 Community Districts
 - 10 City Council Districts
- Transportation
 - Streets
 - zoom in/out Highways / Major Roads
 - Subway Stations
 - Subway Routes
 - Ferry Stops
 - Ferry Routes
- Parks, Playgrounds, & Open Space
 - NYC Parks (Dept. of Parks & Rec.)
 - New Jersey State Parks & Public Land
 - New York State Parks & Public Land
 - Open Space (Dept. of City Planning)
 - Community Gardens
 - Playgrounds
 - Green Spaces Along Streets
 - Golf Courses
 - Baseball/Soccer Fields
 - Tennis/Basketball Courts & Tracks
 - Cemeteries
- Property & Land Use
 - Block/Lot Boundaries
 - Buildings
 - NYCHA Properties
 - Schools
 - Historic Houses
 - Green Markets
 - 1 & 2 Family Residential
 - Multi-family Residential
 - Mixed Use
 - Commercial
 - Institutions
 - Transportation & Parking
 - Industrial
 - Vacant Lots
- Trees
 - Greening for Breathing Trees
 - Neighborhood Trees
 - NJ Forested Areas
- Environmental Characteristics
 - Comprehensive Restoration Plan
 - Comprehensive Restoration Plan
 - HEP Acquisition Sites
 - HEP Restoration Sites
 - Living Memorials to 9-11-2001
 - Stewardship Organizations
 - Stewardship Spheres
 - Coastal Storm Impact Zones
 - Cat. 1 (winds 74-95 mph)
 - Cat. 2 (winds 96-110 mph)
 - Cat. 3 (winds 111-130 mph)
 - Cat. 4 (winds 131+ mph)
 - Superfund & other remedial sites

0.25 miles :Map Width Zoom To NYC Zoom To Region

INFORMATION ABOUT THE LOT YOU IDENTIFIED:

Borough: Bronx Block: 2697 Lot: 35 Police Precinct: 41
 Address, ZIP Code: 920 WESTCHESTER AVENUE, 10459
 Lot Area: 14780 sq. feet Lot Frontage: 71.91 feet Lot Depth: 69 feet
 Number of buildings: 1 Year built: 1926
 Number of floors: 1 Building Gross Area: 5250 sq. feet
 Residential Units: 0 Total # of Units: 3
 Landuse: Parking Facilities
 Zoning: R7-1: Residential
 Commercial Overlay: 5250 Zoning Map #: 06C
(PDF version of most recent City Planning zoning map & proposed zoning changes for this area.)
 Floor Area Ratio: 0.36 Max. Allowable Floor Area Ratio: 3.44
(FAR may depend on street widths or other characteristics. Contact City Planning Dept. for latest information.)
 Owner: FELICIANO, SR. SAUL
 More building information: [NYC Dept. of Buildings](#)
 More property information: [NYC Dept. of Finance Assessment Roll](#)
 More zoning information: [CITI Zoning Guide](#)
 Learn more about NYC's drinking water: [NYC Watershed Resources](#)

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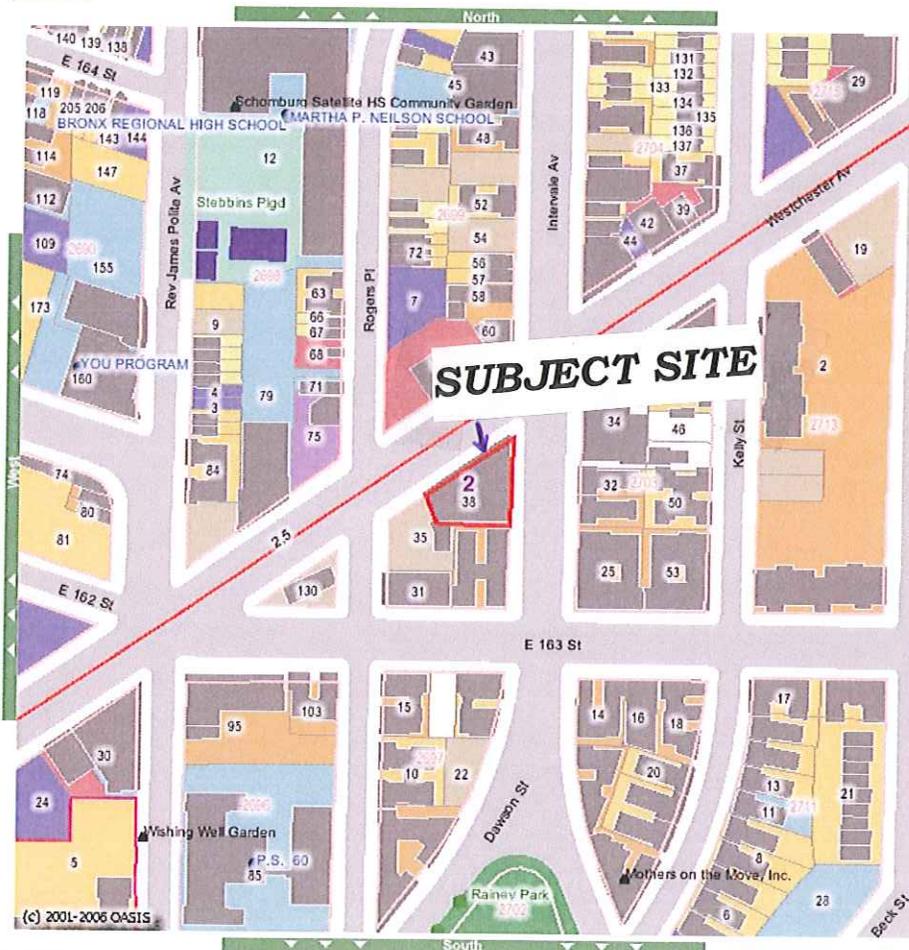
nyc **oasis**

Redraw Map - zoom to selected area / show new data **Help** **Select all layers** **Unselect all layers** **Garden Search** **Estuary Search**

Select a tool (click on the icon) & click on the map:

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OASIS!



Turn map layers on and off by clicking in the check boxes and then clicking on the Refresh Map button

Photos & Imagery (view 1 at a time)

- [Aerial Photo \(2004\)](#) New (more info)
- [Aerial Photo \(1996\)](#)
- [Infrared Aerial Photo \(2001\)](#)

[Classified Landcover \(2001\)](#)

- Tree/Forest
- Grassland
- Impervious/Other
- Water

Boundaries & Labels

- [Town/Neighborhood](#)
- [County / Borough](#)
- [Waterbody Labels](#)
- [5 Community Districts](#)
- [10 City Council Districts](#)

Transportation

- [Streets](#)
- zoom in/out [Highways / Major Roads](#)
- [Subway Stations](#)
- [Subway Routes](#)
- [Ferry Stops](#)
- [Ferry Routes](#)

Parks, Playgrounds, & Open Space

- [NYC Parks \(Dept. of Parks & Rec.\)](#)
- [New Jersey State Parks & Public Land](#)
- [New York State Parks & Public Land](#)
- [Open Space \(Dept. of City Planning\)](#)
- [Community Gardens](#)
- [Playgrounds](#)
- [Green Spaces Along Streets](#)
- [Golf Courses](#)
- [Baseball/Soccer Fields](#)
- [Tennis/Basketball Courts & Tracks](#)
- [Cemeteries](#)

Property & Land Use

- [Block/Lot Boundaries](#)
- [Buildings](#)
- [NYCHA Properties](#)
- [Schools](#)
- [Historic Houses](#)
- [Green Markets](#)
- [1 & 2 Family Residential](#)
- [Multi-family Residential](#)
- [Mixed Use](#)
- [Commercial](#)
- [Institutions](#)
- [Transportation & Parking](#)
- [Industrial](#)
- [Vacant Lots](#)

Trees

- [Greening for Breathing Trees](#)
- [Neighborhood Trees](#)
- [NJ Forested Areas](#)

Environmental Characteristics

- [Comprehensive Restoration Plan](#)
- [Comprehensive Restoration Plan](#)
- [HEP Acquisition Sites](#)
- [HEP Restoration Sites](#)
- [Living Memorials to 9-11-2001](#)
- [Stewardship Organizations](#)
- [Stewardship Spheres](#)
- [Coastal Storm Impact Zones](#)
- [Superfund & other remedial sites](#)

0.25 miles :Map Width

INFORMATION ABOUT THE LOT YOU IDENTIFIED:

Borough: Bronx **Block:** 2697 **Lot:** 38 **Police Precinct:** 41
Address, ZIP Code: 924 WESTCHESTER AVENUE, 10459
Lot Area: 11250 sq. feet **Lot Frontage:** 161.92 feet **Lot Depth:** 133.17 feet
Number of buildings: 1 **Year built:** 1930 *(Year Built is an estimate)*
Number of floors: 1 **Building Gross Area:** 11250 sq. feet
Residential Units: 0 **Total # of Units:** 3
Landuse: Industrial and Manufacturing
Zoning: R7-1: Residential
Commercial Overlay: 0 **Zoning Map #:** 06C
(PDF version of most recent City Planning zoning map & proposed zoning changes for this area.)
Floor Area Ratio: 1 **Max. Allowable Floor Area Ratio:** 3.44
(FAR may depend on street widths or other characteristics. Contact [City Planning Dept.](#) for latest information.)
Owner: WILLOWMAX,
More building information: [NYC Dept. of Buildings](#)
More property information: [NYC Dept. of Finance Assessment Roll](#)
More zoning information: [CITI Zoning Guide](#)
Learn more about NYC's drinking water: [NYC Watershed Resources](#)

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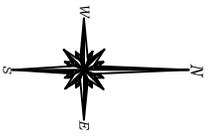
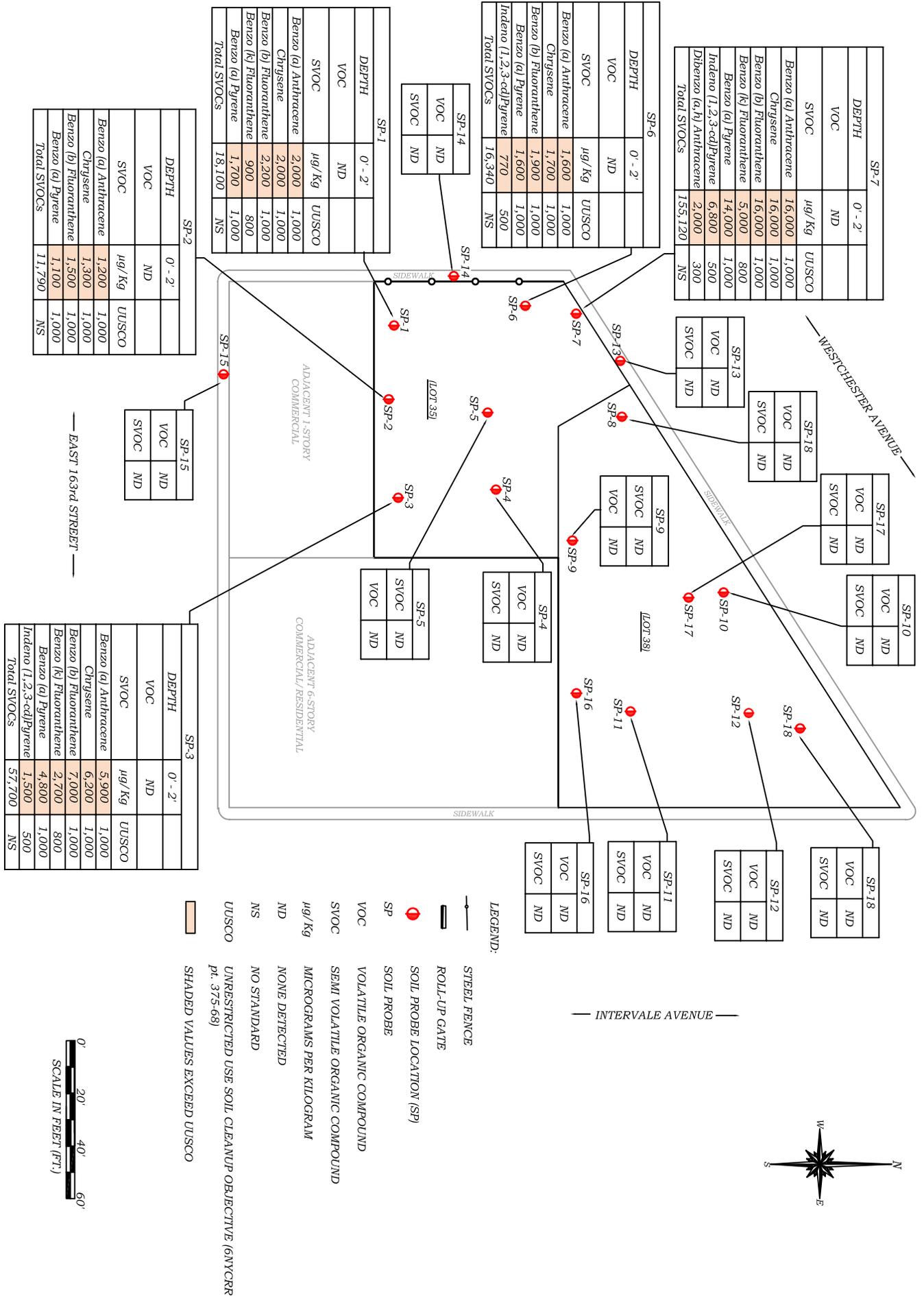
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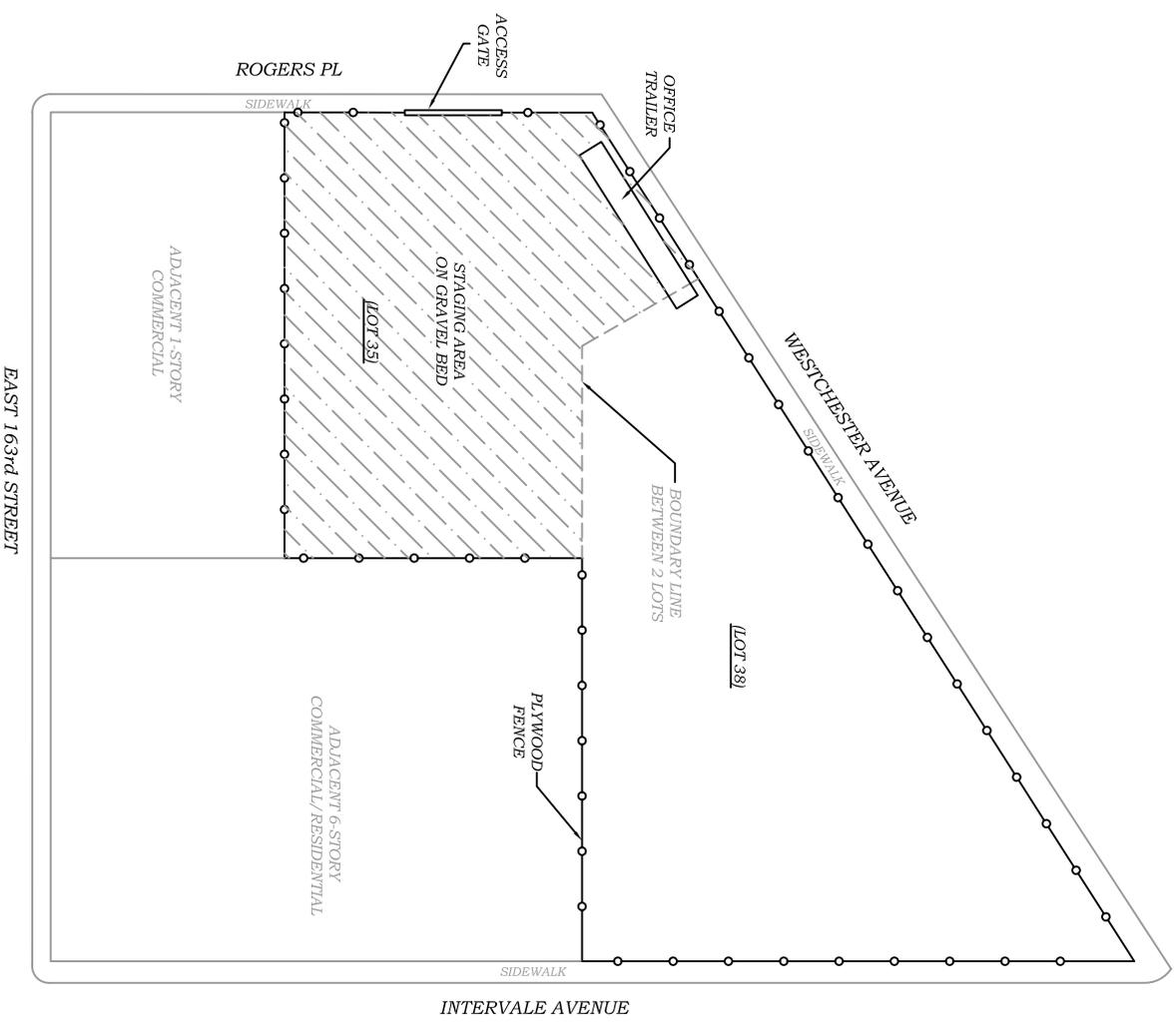
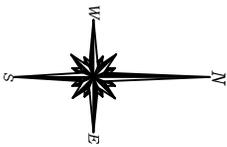
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TTITLE: **FIGURE 5A: SOIL CONTAMINATION DIAGRAM - (SHALLOW)**





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 www.hydrotechenvironmental.com

NYC OFFICE:
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 BROOKLYN, NEW YORK 11225
 T (718)636-0900 F (718)636-0900

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FIGURE 6: EQUIPMENT AND MATERIAL STAGING AREA



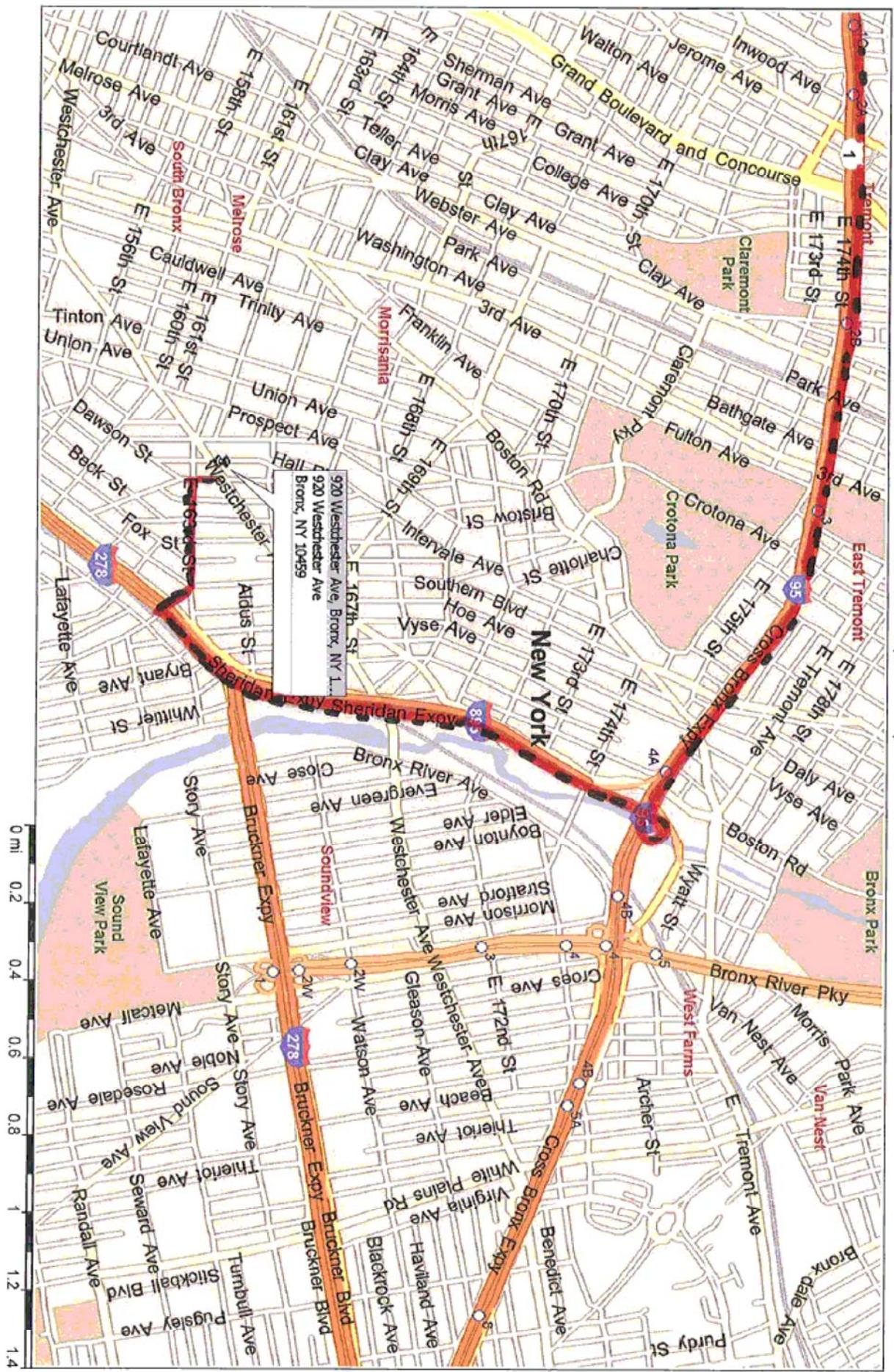
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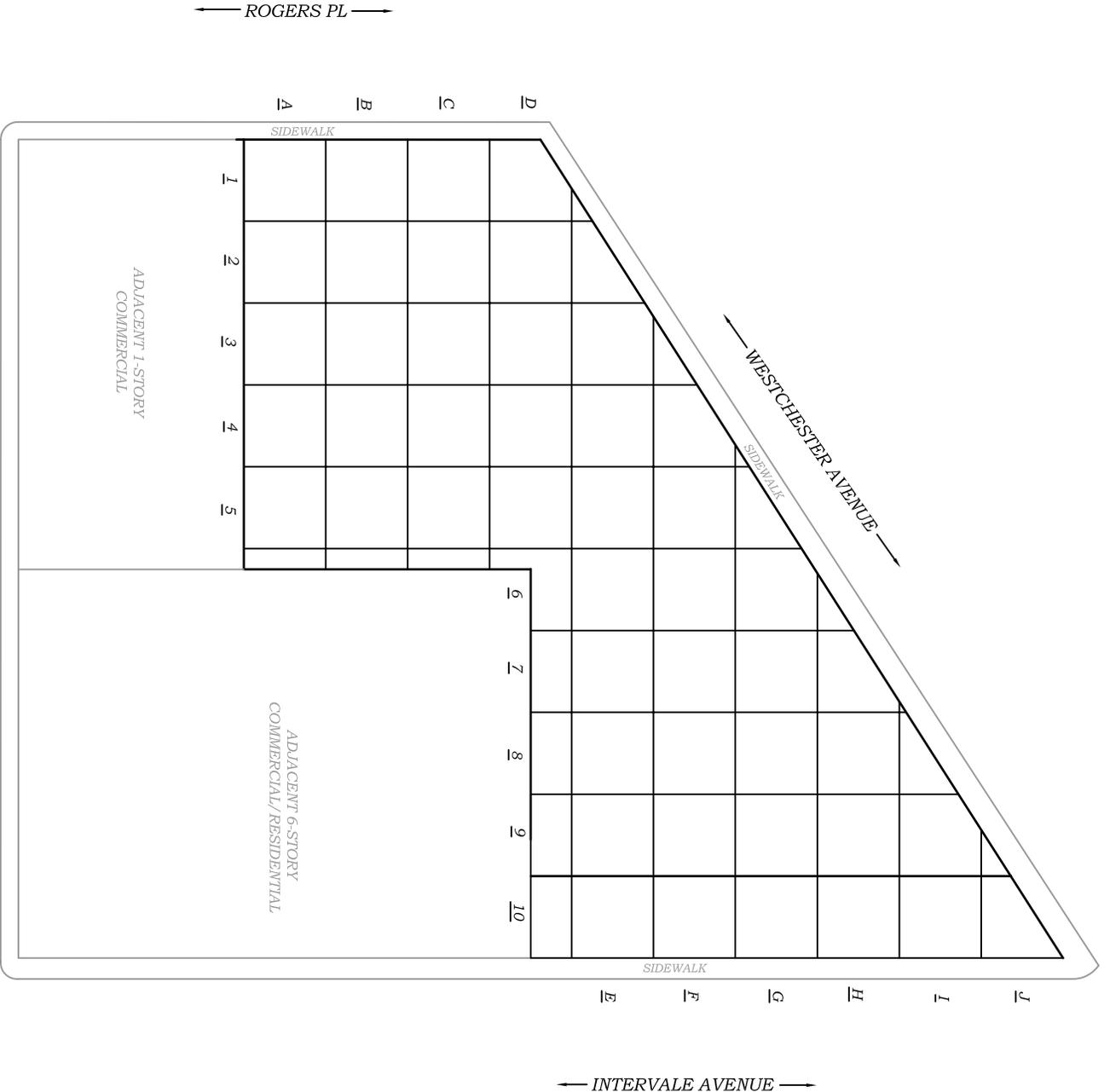
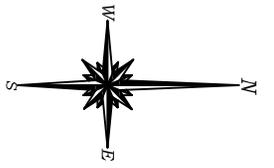
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FIGURE 7 : WASTE TRANSPORT VEHICLE ROUTE



Soundview, Bronx, New York



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 COMMACK, NEW YORK 11725
 T (631)462-5866 F (631)462-5877
 www.hydrotechenvironmental.com

NYC OFFICE:

15 OCEAN AVENUE, 2nd Floor
 BROOKLYN, NEW YORK 11225
 T (718)693-0980 F (718)636-0900

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Approved By:	MS
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Scale:	AS NOTED

TITLE:

FIGURE 8: ALPHA NUMERIC SITE MAP

Table 1**Unrestricted Use Soil Cleanup Objectives**

Contaminant	CAS Number	Unrestricted Use
Metals		
Arsenic	7440-38-2	13 ^c
Barium	7440-39-3	350 ^c
Beryllium	7440-41-7	7.2
Cadmium	7440-43-9	2.5 ^c
Chromium, hexavalent ^c	18540-29-9	1 ^b
Chromium, trivalent ^c	16065-83-1	30 ^c
Copper	7440-50-8	50
Total Cyanide ^{e,f}		27
Lead	7439-92-1	63 ^c
Manganese	7439-96-5	1600 ^c
Total Mercury		0.18 ^c
Nickel	7440-02-0	30
Selenium	7782-49-2	3.9 ^c
Silver	7440-22-4	2
Zinc	7440-66-6	109 ^c
PCBs/Pesticides		
2,4,5-TP Acid (Silvex) ^f	93-72-1	3.8
4,4'-DDE	72-55-9	0.0033 ^b
4,4'-DDT	50-29-3	0.0033 ^b
4,4'-DDD	72-54-8	0.0033 ^b
Aldrin	309-00-2	0.005 ^c
alpha-BHC	319-84-6	0.02
beta-BHC	319-85-7	0.036
Chlordane (alpha)	5103-71-9	0.094

Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
delta-BHC ^g	319-86-8	0.04
Dibenzofuran ^f	132-64-9	7
Dieldrin	60-57-1	0.005 ^c
Endosulfan I ^{d, f}	959-98-8	2.4
Endosulfan II ^{d, f}	33213-65-9	2.4
Endosulfan sulfate ^{d, f}	1031-07-8	2.4
Endrin	72-20-8	0.014
Heptachlor	76-44-8	0.042
Lindane	58-89-9	0.1
Polychlorinated biphenyls	1336-36-3	0.1
Semivolatile organic compounds		
Acenaphthene	83-32-9	20
Acenaphthylene ^f	208-96-8	100 ^a
Anthracene ^f	120-12-7	100 ^a
Benz(a)anthracene ^f	56-55-3	1 ^c
Benzo(a)pyrene	50-32-8	1 ^c
Benzo(b)fluoranthene ^f	205-99-2	1 ^c
Benzo(g,h,i)perylene ^f	191-24-2	100
Benzo(k)fluoranthene ^f	207-08-9	0.8 ^c
Chrysene ^f	218-01-9	1 ^c
Dibenz(a,h)anthracene ^f	53-70-3	0.33 ^b
Fluoranthene ^f	206-44-0	100 ^a
Fluorene	86-73-7	30
Indeno(1,2,3-cd)pyrene ^f	193-39-5	0.5 ^c
m-Cresol ^f	108-39-4	0.33 ^b
Naphthalene ^f	91-20-3	12
o-Cresol ^f	95-48-7	0.33 ^b

Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
p-Cresol ^f	106-44-5	0.33 ^b
Pentachlorophenol	87-86-5	0.8 ^b
Phenanthrene ^f	85-01-8	100
Phenol	108-95-2	0.33 ^b
Pyrene ^f	129-00-0	100
Volatile organic compounds		
1,1,1-Trichloroethane ^f	71-55-6	0.68
1,1-Dichloroethane ^f	75-34-3	0.27
1,1-Dichloroethene ^f	75-35-4	0.33
1,2-Dichlorobenzene ^f	95-50-1	1.1
1,2-Dichloroethane	107-06-2	0.02 ^c
cis -1,2-Dichloroethene ^f	156-59-2	0.25
trans-1,2-Dichloroethene ^f	156-60-5	0.19
1,3-Dichlorobenzene ^f	541-73-1	2.4
1,4-Dichlorobenzene	106-46-7	1.8
1,4-Dioxane	123-91-1	0.1 ^b
Acetone	67-64-1	0.05
Benzene	71-43-2	0.06
n-Butylbenzene ^f	104-51-8	12
Carbon tetrachloride ^f	56-23-5	0.76
Chlorobenzene	108-90-7	1.1
Chloroform	67-66-3	0.37
Ethylbenzene ^f	100-41-4	1
Hexachlorobenzene ^f	118-74-1	0.33 ^b
Methyl ethyl ketone	78-93-3	0.12
Methyl tert-butyl ether ^f	1634-04-4	0.93
Methylene chloride	75-09-2	0.05

Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
n - Propylbenzene ^f	103-65-1	3.9
sec-Butylbenzene ^f	135-98-8	11
tert-Butylbenzene ^f	98-06-6	5.9
Tetrachloroethene	127-18-4	1.3
Toluene	108-88-3	0.7
Trichloroethene	79-01-6	0.47
1,2,4-Trimethylbenzene ^f	95-63-6	3.6
1,3,5-Trimethylbenzene ^f	108-67-8	8.4
Vinyl chloride ^f	75-01-4	0.02
Xylene (mixed)	1330-20-7	0.26

All soil cleanup objectives (SCOs) are in parts per million (ppm).

Footnotes

^a The SCOs for unrestricted use were capped at a maximum value of 100 ppm. See [Technical Support Document \(TSD\)](#), section 9.3.

^b For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the Track 1 SCO value.

^c 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 1 SCO value for this use of the site.

^d SCO is the sum of endosulfan I, endosulfan II and endosulfan sulfate.

^e 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.

^f Protection of ecological resources SCOs were not developed for contaminants identified in Table 375-6.8(b) with “NS”. Where such contaminants appear in Table 375-6.8(a), the applicant may be required by the Department to calculate a protection of ecological resources SCO according to the TSD.

(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

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
Acenaphthylene	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 Ground-water
		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.

I	The monthly geometric mean, from a minimum of five examinations, shall not exceed 2,000.
A-Special	The geometric mean, of not less than five samples, taken over not more than a 30-day period shall not exceed 200.

(c) The total and fecal coliform standards for classes B, C, D, SB, SC and I shall be met during all periods:

- (1) when disinfection is required for SPDES permitted discharges directly into, or affecting the best usage of, the water; or
- (2) when the department determines it necessary to protect human health.

Historical Note

Sec. filed March 20, 1967; repealed, new filed: April 28, 1972; Aug. 2, 1978; amd. filed Nov. 5, 1984; repealed, new filed Aug. 2, 1991; amd. filed Dec. 10, 1993 eff. 30 days after filing. Amended (a). **The text reflects revisions filed January 17, 2008 and effective February 16, 2008.**

§703.5 Water quality standards for taste-, color- and odor-producing, toxic and other deleterious substances

(a) Water quality standards for specific substances or groups of substances are listed in [Table 1](#) of subdivision (f) of this section for the applicable water classes. The substance name is listed with the associated Chemical Abstract Service Registry Number (CAS No.) where applicable. For entries in [Table 1](#) of subdivision (f) of this section that refer to chemical groups, congeners or other expressions of multiple substances, the standard applies to the sum of the substances, unless otherwise indicated.

(b) Standards are Health (Water Source), Health (Fish Consumption), Aquatic (Chronic), Aquatic (Acute), Wildlife, Aesthetic (Water Source), Aesthetic (Food Source), or Recreation based and are respectively designated as H(W.S), H(F.C), A(C), A(A), W, E(W.S), E(F.S), or R in the column headed "Type." Where more than one Type of standard is listed for a water class, the most stringent applies.

(c) The "Basis Code" in [Table 1](#) of subdivision (f) of this section provides a further description of the basis of the standard. A list of basis codes is found in [Table 2](#) of subdivision (f) of this section.

(d) The standard is the maximum allowable concentration in micrograms per liter (ug/L), unless otherwise noted. A standard defined by the symbol "ND" means not detectable by the analytical tests specified or approved pursuant to Part 700 of this Title.

(e) Special interpretive remarks are provided as necessary.

(f) *Tables.*

Table 1 (cf. section 703.5) WATER QUALITY STANDARDS SURFACE WATERS AND GROUNDWATER

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	TYPE	BASIS CODE
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Acenaphthene (83-32-9)	A, A-S, AA, AA-S	20	E(WS)	U
Acetaldehyde (75-07-0)	A, A-S, AA, AA-S	8	H(WS)	A
	GA	8	H(WS)	A
Acrolein (107-02-8)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Acrylamide (79-06-1)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Acrylonitrile (107-13-1)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Alachlor (15972-60-8)	A, A-S, AA, AA-S	0.5	H(WS)	A
	GA	0.5	H(WS)	A
Aldicarb (116-06-3)	A, A-S, AA, AA-S	7	H(WS)	B
	GA	*	H(WS)	
Remark: * Refer to standards for "Aldicarb and Methomyl."				
Aldicarb and Methomyl (116-06-3; 16752-77-5)	GA	0.35*	H(WS)	F
Remark: * Applies to the sum of these substances.				
Aldrin (309-00-2)	GA	ND	H(WS)	F
	A, A-S, AA, AA-S, B, C, D	*	H(FC)	
	SA, SB, SC, SD	*	H(FC)	
Remark: * Refer to standards for "Aldrin and Dieldrin."				
Aldrin and Dieldrin (309-00-2; 60-57-1)	A, A-S, AA, AA-S, B, C, D	0.001	H(FC)	
	SA, SB, SC, SD	0.001	H(FC)	
Remark: * Applies to the sum of these substances.				
Alkyldimethyl benzyl ammonium chloride (68391-01-5)	A, A-S, AA, AA-S, B, C	*	A(C)	
Remark: * Refer to standards for "Quaternary ammonium compounds."				
Allyl chloride (107-05-1)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Aluminum, ionic (CAS No. Not Applicable)	A, A-S, AA, AA-S, B, C	100*	A(C)	
Remark: * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15 (c) of this Title.				
Ametryn	GA	50	H(WS)	J

(834-12-8)				
4-Aminobiphenyl (92-67-1)	GA	*	H(W/S)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Aminocresols (95-84-1; 2835-95-2; 2835-99-6)	A, A-S, AA, AA-S	*	E(W/S)	
	GA	*	E(W/S)	
	A, A-S, AA, AA-S, B, C, D	**	E(F/S)	
Remarks: * Refer to standards for "Phenolic compounds (total phenols)." ** Refer to standards for "Phenols, total unchlorinated."				
3-Aminotoluene (108-44-1)	GA	*	H(W/S)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
4-Aminotoluene (106-49-0)	GA	*	H(W/S)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Ammonia and Ammonium (7664-41-7; CAS No. Not Applicable)	A, A-S, AA, AA-S	2,000*	H(W/S)	H H
	GA	2,000*	H(W/S)	
	A, A-S, AA, AA-S, B, C	**	A(C)	
	D	**	A(A)	
	SA, SB, SC, I	35***	A(C)	
	SA, SB, SC, I, SD	230***	A(A)	
Remarks: * NH ₃ + NH ₄ ⁺ as N. ** Un-ionized ammonia as NH ₃ ; tables below provide the standard in ug/L at varying pH and temperature for different classes and specifications. Linear interpolation between the listed pH values and temperatures is applicable. *** Applies to un-ionized ammonia as NH ₃				

Classes A, A-S, AA, AA-S, B, C with the (T) or (TS) Specification

pH	0°C	5°C	10°C	15-30°C
6.50	0.7	0.9	1.3	1.9
6.75	1.2	1.7	2.3	3.3
7.00	2.1	2.9	4.2	5.9
7.25	3.7	5.2	7.4	11
7.50	6.6	9.3	13	19
7.75	11	15	22	31
8.0-9.0	13	18	25	35

Classes A, A-S, AA, AA-S, B, C without the (T) or (TS) Specification

pH	0°C	5°C	10°C	15°C	20-30°C
6.50	0.7	0.9	1.3	1.9	2.6
6.75	1.2	1.7	2.3	3.3	4.7
7.00	2.1	2.9	4.2	5.9	8.3
7.25	3.7	5.2	7.4	11	15
7.50	6.6	9.3	13	19	26

7.75	11	15	22	31	43
8.0-9.0	13	18	25	35	50

Class D

pH	0°C	5°C	10°C	15°C	20°C	25-30°C
6.50	9.1	13	18	26	36	51
6.75	15	21	30	42	59	84
7.00	23	33	46	66	93	131
7.25	34	48	68	95	140	190
7.50	45	64	91	130	180	260
7.75	56	80	110	160	220	320
8.0-9.0	65	92	130	180	260	370

Table 1 (cf. section 703.5)(Continued)WATER QUALITY STANDARDS SURFACE WATERS AND GROUNDWATER

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	TYPE	BASIS CODE
Aniline (62-53-3)	A, A-S, AA, AA-S GA	5 *	H(W) H(W)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Antimony (CAS No. Not Applicable)	A, A-S, AA, AA-S GA	3 3	H(W) H(W)	B B
Arsenic (CAS No. Not Applicable)	A, A-S, AA, AA-S GA A, A-S, AA, AA-S, B, C A, A-S, AA, AA-S, B, C, D SA, SB, SC SD	50 25 150* 340* 63* 120*	H(W) H(W) A(C) A(A) A(C) A(A)	G F
Remark: * Dissolved arsenic form.				
Asbestos (CAS No. Not Applicable)	A, A-S, AA, AA-S GA	* *	H(W) H(W)	G G
Remark: * 7,000,000 fibers (longer than 10 um)/L				
Atrazine (1912-24-9)	GA	7.5	H(W)	F
Azinphosmethyl (86-50-0)	GA A, A-S, AA, AA-S, B, C SA, SB, SC	4.4 0.005* 0.01	H(W) A(C) A(C)	F
Remark: * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) of this Title.				
Azobenzene (103-33-3)	GA	*	H(W)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Barium (CAS No. Not Applicable)	A, A-S, AA, AA-S GA	1,000 1,000	H(W) H(W)	G F
Benefin (1861-40-1)	GA	35	H(W)	F
Benzene	A, A-S, AA, AA-S GA	1 1	H(W) H(W)	A A

(71-43-2)	A, A-S, AA, AA-S, B, C, D SA, SB, SC, I, SD	10 10	H(FC) H(FC)	A A
Benzidine (92-87-5)	GA A, A-S, AA, AA-S, B, C D	* 0.1** 0.1**	H(WS) A(C) A(A)	J
Remarks: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance. ** For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) and (d) of this Title.				
Benzo(a)pyrene (50-32-8)	GA	ND	H(WS)	F
Beryllium (CAS No. Not Applicable)	A, A-S, AA, AA-S, B, C	**	A(C)	
Remarks: * 11 ug/L when hardness is less than or equal to 75 ppm; 1,100 ug/L when hardness is greater than 75 ppm. ** For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) of this Title. Aquatic Type standards apply to acid-soluble form.				
1,1'-Biphenyl (92-52-4)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Bis(2-chloroethoxy)methane (111-91-1)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Bis(2-chloroethyl)ether (111-44-4)	GA	1.0	H(WS)	F
Bis(chloromethyl)ether (542-88-1)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Bis(2-chloro-1-methylethyl) ether (108-60-1)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Bis(2-ethylhexyl)phthalate (117-81-7)	A, A-S, AA, AA-S GA A, A-S, AA, AA-S, B, C	5 5 0.6	H(WS) H(WS) A(C)	A A
Boron (CAS No. Not Applicable)	GA A, A-S, AA, AA-S, B, C SA, SB, SC	1,000 10,000 1,000	H(WS) A(C) A(C)	H
Remark: * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) of this Title. Aquatic Type standards apply to acid-soluble form.				
Bromacil (314-40-9)	GA	4.4	H(WS)	F
Bromobenzene (108-86-1)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this				

Table) applies to this substance.				
Bromochloromethane (74-97-5)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Bromomethane (74-83-9)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Butachlor (23184-66-9)	GA	3.5	H(WS)	F
cis-2-Butenal (15798-64-8)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
trans-2-Butenal (123-73-9)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
cis-2-Butenenitrile (1190-76-7)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
trans-2-Butenenitrile (627-26-9)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Butylate (2008-41-5)	GA	50	H(WS)	J
n-Butylbenzene (104-51-8)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
sec-Butylbenzene (135-98-8)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
tert-Butylbenzene (98-06-6)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Cadmium (CAS No. Not Applicable)	A, A-S, AA, AA-S GA A, A-S, AA, AA-S, B, C A, A-S, AA, AA-S, B, C, D SA, SB, SC, I SD	5 5 * ** 7.7 21	H(WS) H(WS) A(C) A(A) A(C) A(A)	B,G B,G
Remarks: * (0.85) exp(0.7852 [ln (ppm hardness)] - 2.715) ** (0.85) exp(1.128 [ln (ppm hardness)] - 3.6867)				

Aquatic Type standards apply to dissolved form.				
Captan (133-06-2)	GA	18	H(WS)	F
Carbaryl (63-25-2)	GA	29	H(WS)	F
Carbofuran (1563-66-2)	A, A-S, AA, AA-S A, A-S, AA, AA-S, B, C D	15 1.0* 10*	H(WS) A(C) A(A)	B
Remark: * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) and (d) of this Title.				
Carbon disulfide (75-15-0)	A, A-S, AA, AA-S	60	H(WS)	B
	GA	60	H(WS)	B
Carbon tetrachloride (56-23-5)	GA	5	H(WS)	F
Carboxin (5234-68-4)	GA	50	H(WS)	J
Chloramben (CAS No. Not Applicable)	GA	50*	H(WS)	J
Remark: * Includes: related forms that convert to the organic acid upon acidification to a pH of 2 or less; and esters of the organic acid.				
Chloranil (118-75-2)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Chlordane (57-74-9)	A, A-S, AA, AA-S	0.05	H(WS)	A
	GA	0.05	H(WS)	A
	A, A-S, AA, AA-S, B, C, D	2×10^{-5}	H(FC)	A
	SA, SB, SC, I, SD	2×10^{-5}	H(FC)	A
Chloride (CAS No. Not Applicable)	A, A-S, AA, AA-S	250,000	H(WS)	H
	GA	250,000	H(WS)	H
Chlorinated dibenzo-p-dioxins and Chlorinated dibenzofurans (CAS No. Not applicable)	A, A-S, AA, AA-S	7×10^{-7} *	H(WS)	A
	GA	7×10^{-7} *	H(WS)	A
	A, A-S, AA, AA-S, B, C, D	6×10^{-10} *	H(FC)	A
	SA, SB, SC, I, SD	6×10^{-10} *	H(FC)	A
	A, A-S, AA, AA-S, B, C, D	3.1×10^{-9} **	W	
	SA, SB, SC, I, SD	3.1×10^{-9} **	W	
<p>Remarks: * Value is for the total of the chlorinated dibenzo-p-dioxins and chlorinated dibenzofurans that are listed in the table below as equivalents of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD).</p> <p>The 2,3,7,8-TCDD equivalent for a congener for the H(WS) standards is obtained by multiplying the concentration of that congener by its Toxicity Equivalency Factor (TEF) from the table below.</p> <p>The 2,3,7,8-TCDD equivalent for a congener for the H(FC) standards is obtained by multiplying the concentration of that congener by its TEF and its Bioaccumulation Equivalency Factor (BEF) from the table below.</p> <p>** Applies only to 2,3,7,8-TCDD</p>				

CONGENER	TEF	BEF
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1	1
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.5	0.9
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.3
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.1

1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.1	0.1
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.01	0.05
Octachlorodibenzo-p-dioxin	0.001	0.01
2,3,7,8-Tetrachlorodibenzofuran	0.1	0.8
1,2,3,7,8-Pentachlorodibenzofuran	0.05	0.2
2,3,4,7,8-Pentachlorodibenzofuran	0.5	1.6
1,2,3,4,7,8-Hexachlorodibenzofuran	0.1	0.08
1,2,3,6,7,8-Hexachlorodibenzofuran	0.1	0.2
2,3,4,6,7,8-Hexachlorodibenzofuran	0.1	0.7
1,2,3,7,8,9-Hexachlorodibenzofuran	0.1	0.6
1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.01	0.01
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.01	0.4
Octachlorodibenzofuran	0.001	0.02

Chlorine, Total Residual (CAS No. Not Applicable)	A, A-S, AA, AA-S, B, C D SA, SB, SC, I SD	5 19 7.5 13	A(C) A(A) A(C) A(A)	
2-Chloroaniline (95-51-2)	GA	*	H(WS)	J

Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

3-Chloroaniline (108-42-9)	GA	*	H(WS)	J
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Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

4-Chloroaniline (106-47-8)	GA	*	H(WS)	J
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Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

Chlorobenzene (108-90-7)	A, A-S, AA, AA-S	5	H(WS)	I
	GA	*	H(WS)	J
	A, A-S, AA, AA-S, B, C, D	400	H(FC)	B
	SA, SB, SC, I, SD	400	H(FC)	B
	A, A-S, AA, AA-S, B, C	5	A(C)	
	A, A-S, AA, AA-S	20	E(WS)	U
	D	50	E(FS)	V

Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

4-Chlorobenzotrifluoride (98-56-6)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
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Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

1-Chlorobutane (109-69-3)	GA	*	H(WS)	J
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Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

Chloroethane (75-00-3)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Chloroform (67-66-3)	A, A-S, AA, AA-S GA	7 7	H(WS) H(WS)	A A
Chloromethyl methyl ether (107-30-2)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
2-Chloronaphthalene (91-58-7)	A, A-S, AA, AA-S	10	E(WS)	U
2-Chloronitrobenzene (88-73-3)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
3-Chloronitrobenzene (121-73-3)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
4-Chloronitrobenzene (100-00-5)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Chloroprene (126-99-8)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Chlorothalonil (1897-45-6)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
2-Chlorotoluene (95-49-8)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
3-Chlorotoluene (108-41-8)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
4-Chlorotoluene (106-43-4)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
4-Chloro-o-toluidine (95-69-2)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				

5-Chloro-o-toluidine (95-79-4)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
3-Chloro-1,1,1-trifluoropropane (460-35-5)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Chromium (CAS No. Not Applicable)	A, A-S, AA, AA-S	50	H(WS)	G
	GA	50	H(WS)	G
	A, A-S, AA, AA-S, B, C	*	A(C)	
	A, A-S, AA, AA-S, B, C, D	**	A(A)	
Remarks: * (0.86) exp(0.819 [ln (ppm hardness)]) + 0.6848 ** (0.316) exp(0.819 [ln (ppm hardness)]) + 3.7256 Aquatic Type standards apply to dissolved form and do not include hexavalent chromium.				
Chromium (hexavalent) (CAS No. Not Applicable)	GA	50	H(WS)	F
	A, A-S, AA, AA-S, B, C	11*	A(C)	
	A, A-S, AA, AA-S, B, C, D	16*	A(A)	
	SA, SB, SC	54**	A(C)	
	SD	1200**	A(A)	
Remarks: * Applies to dissolved form. ** Applies to acid-soluble form.				
Cobalt (CAS No. Not Applicable)	A, A-S, AA, AA-S, B, C	5*	A(C)	
Remark: * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) of this Title. Aquatic Type standards apply to acid-soluble form.				
Copper (CAS No. Not Applicable)	A, A-S, AA, AA-S	200	H(WS)	H
	GA	200	H(WS)	H
	A, A-S, AA, AA-S, B, C	*	A(C)	
	A, A-S, AA, AA-S, B, C, D	**	A(A)	
	SA, SB, SC, I	***	A(C)	
	SA, SB, SC, I, SD	****	A(A)	
Remarks: * (0.96) exp(0.8545 [ln (ppm hardness)]) - 1.702 ** (0.96) exp(0.9422 [ln (ppm hardness)]) - 1.7 *** Standard is 3.4 ug/L except in New York/New Jersey harbor where it is 5.6 ug/L. **** Standard is 4.8 ug/L except in New York/New Jersey harbor where it is 7.9 ug/L. Aquatic Type standards apply to dissolved form.				
Cyanide (CAS No. Not Applicable)	A, A-S, AA, AA-S	200	H(WS)	B
	GA	200	H(WS)	B
	A, A-S, AA, AA-S, B, C, D	9000	H(FC)	B
	SA, SB, SC, I, SD	9000	H(FC)	B
	A, A-S, AA, AA-S, B, C	5.2*	A(C)	
	A, A-S, AA, AA-S, B, C, D	22*	A(A)	

	SA, SB, SC	1.0*	A(C)	
	SD	1.0*	A(A)	
Remark: * As free cyanide: the sum of HCN and CN ⁻ expressed as CN.				
Cyanogen bromide (506-68-3)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Cyanogen chloride (506-77-4)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Dalapon (CAS No. Not Applicable)	GA	50*	H(WS)	J
Remark: * Includes: related forms that convert to the organic acid upon acidification to a pH of 2 or less; and esters of the organic acid.				
p,p'-DDD (72-54-8)	A, A-S, AA, AA-S GA A, A-S, AA, AA-S, B, C, D SA, SB, SC, I, SD A, A-S, AA, AA-S, B, C, D SA, SB, SC, I, SD	0.3 0.3 8×10^{-5} 8×10^{-5} * *	H(WS) H(WS) H(FC) H(FC) W W	A A A A
Remark: * See standard for p,p'-DDT.				
p,p'-DDE (72-55-9)	A, A-S, AA, AA-S GA A, A-S, AA, AA-S, B, C, D SA, SB, SC, I, SD A, A-S, AA, AA-S, B, C, D SA, SB, SC, I, SD	0.2 0.2 7×10^{-6} 7×10^{-6} * *	H(WS) H(WS) H(FC) H(FC) W W	A A A A
Remark: * See standard for p,p'-DDT.				
p,p'-DDT (50-29-3)	A, A-S, AA, AA-S GA A, A-S, AA, AA-S, B, C, D SA, SB, SC, I, SD A, A-S, AA, AA-S, B, C, D SA, SB, SC, I, SD	0.2 0.2 1×10^{-5} 1×10^{-5} $1.1 \times 10^{-5+}$ $1.1 \times 10^{-5+}$	H(WS) H(WS) H(FC) H(FC) W W	A A A A
Remark: * Applies to the sum of p,p'-DDD, p,p'-DDE and p,p'-DDT.				
Dechlorane Plus (13560-89-9)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Demeton (8065-48-3; 298-03-3; 126-75-0)	A, A-S, AA, AA-S, B, C SA, SB, SC	0.1* 0.1	A(C) A(C)	
Remark: * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) of this Title. Standards apply to the sum of these substances.				
Diazinon (333-41-5)	GA A, A-S, AA, AA-S, B, C	0.7 0.08*	H(WS) A(C)	F
Remark: * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) of this Title.				
1,2-Dibromobenzene (583-53-9)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				

1,3-Dibromobenzene (108-36-1)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
1,4-Dibromobenzene (106-37-6)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
1,2-Dibromo-3-chloropropane (96-12-8)	A, A-S, AA, AA-S GA	0.04 0.04	H(WS) H(WS)	A A
Dibromodichloromethane (594-18-3)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Dibromomethane (74-95-3)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Di-n-butyl phthalate (84-74-2)	GA	50	H(WS)	J
Dicamba (1918-00-9)	GA	0.44	H(WS)	F
Dichlorobenzenes (95-50-1; 541-73-1; 106-46-7)	A, A-S, AA, AA-S	3*	H(WS)	A
	GA	3*	H(WS)	A
	A, A-S, AA, AA-S, B, C	5**	A(C)	
	A, A-S, AA, AA-S	20***/30****	E(WS)	U
	D	50**	E(FS)	V
Remarks: * Applies to each isomer (1,2-,1,3- and 1,4-dichlorobenzene) individually. ** Applies to the sum of 1,2-, 1,3- and 1,4-dichlorobenzene. For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) of this Title. *** Applies to 1,3-dichlorobenzene only. **** Applies to 1,4-dichlorobenzene only.				
3,3'-Dichlorobenzidine (91-94-1)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
3,4-Dichlorobenzotrifluoride (328-84-7)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
cis-1,4-Dichloro-2-butene (1476-11-5)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
trans-1,4-Dichloro-2-butene	GA	*	H(WS)	J

(110-57-6)					
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Dichlorodifluoromethane (75-71-8)	GA	*	H(WS)	J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
1,1-Dichloroethane (75-34-3)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
1,2-Dichloroethane (107-06-2)	A, A-S, AA, AA-S GA	0.6 0.6	H(WS) H(WS)	A A	
1,1-Dichloroethene (75-35-4)	GA	*	H(WS)	J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
cis-1,2-Dichloroethene (156-59-2)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
trans-1,2-Dichloroethene (156-60-5)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Dichlorofluoromethane (75-43-4)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,4-Dichlorophenol (120-83-2)	A, A-S, AA, AA-S GA A, A-S, AA, AA-S, B, C, D	0.3* ** ***	E(WS) E(WS) E(FS)	U	
Remarks: * Also see standards for "Phenolic compounds (total phenols)." ** Refer to standards for "Phenolic compounds (total phenols)." *** Refer to standards for "Phenols, total chlorinated."					
2,4-Dichlorophenoxyacetic acid (94-75-7)	A, A-S, AA, AA-S GA	50 50	H(WS) H(WS)	G G	
1,1-Dichloropropane (78-99-9)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
1,2-Dichloropropane (78-87-5)	A, A-S, AA, AA-S GA	1 1	H(WS) H(WS)	A A	
1,3-Dichloropropane (142-28-9)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,2-Dichloropropane	A, A-S, AA, AA-S	5	H(WS)	I	

(594-20-7)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
1,3-Dichloropropene (542-75-6)	A, A-S, AA, AA-S GA	0.4* 0.4*	H(WS) H(WS)	A A
Remark: * Applies to the sum of cis- and trans-1,3-dichloropropene, CAS Nos. 10061-01-5 and 10061-02-6, respectively.				
2,3-Dichlorotoluene (32768-54-0)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
2,4-Dichlorotoluene (95-73-8)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
2,5-Dichlorotoluene (19398-61-9)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
2,6-Dichlorotoluene (118-69-4)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
3,4-Dichlorotoluene (95-75-0)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
3,5-Dichlorotoluene (25186-47-4)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Dieldrin (60-57-1)	A, A-S, AA, AA-S	0.004	H(WS)	A
	GA	0.004	H(WS)	A
	A, A-S, AA, AA-S, B, C, D	6×10^{-7}	H(FC)	A
	SA, SB, SC, I, SD	6×10^{-7}	H(FC)	A
	A, A-S, AA, AA-S, B, C	0.056	A(C)	
Di(2-ethylhexyl)adipate (103-23-1)	A, A-S, AA, AA-S GA	20 20	H(WS) H(WS)	A A
	1,2-Difluoro-1,1,2,2-tetrachloroethane (76-12-0)	GA	*	H(WS)
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
1,2-Diisopropylbenzene (577-55-9)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				

1,3-Diisopropylbenzene (99-62-7)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
1,4-Diisopropylbenzene (100-18-5)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
N,N-Dimethylaniline (121-69-7)	A, A-S, AA, AA-S GA	1 1	H(WS) H(WS)	A A
2,3-Dimethylaniline (87-59-2)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
2,4-Dimethylaniline (95-68-1)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
2,5-Dimethylaniline (95-78-3)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
2,6-Dimethylaniline (87-62-7)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
3,4-Dimethylaniline (95-64-7)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
3,5-Dimethylaniline (108-69-0)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
3,3'-Dimethylbenzidine (119-93-7)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
4,4'-Dimethylbibenzyl (538-39-6)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
4,4'-Dimethyldiphenylmethane (4957-14-6)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
alpha, alpha-Dimethylphenethylamine (122-09-8)	GA	*	H(WS)	J

Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,4-Dimethylphenol (105-67-9)	A, A-S, AA, AA-S, B, C, D	1000	H(FC)	B	
	SA, SB, SC, I, SD	1000	H(FC)	B	
	A, A-S, AA, AA-S	*	E(WS)		
	GA	*	E(WS)		
	A, A-S, AA, AA-S, B, C, D	**	E(FS)		
Remarks: * Refer to standards for "Phenolic compounds (total phenols)."					
** Refer to standards for "Phenols, total unchlorinated."					
Dimethyl tetrachloroterephthalate (1861-32-1)	GA	50	H(WS)	J	
1,3-Dinitrobenzene (99-65-0)	GA	*	H(WS)	J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,4-Dinitrophenol (51-28-5)	A, A-S, AA, AA-S, B, C, D	400	H(FC)	B	
	SA, SB, SC, I, SD	400	H(FC)	B	
	A, A-S, AA, AA-S	*	E(WS)		
	GA	*	E(WS)		
	A, A-S, AA, AA-S, B, C, D	**	E(FS)		
Remarks: * Refer to standards for "Phenolic compounds (total phenols)."					
** Refer to standards for "Phenols, total unchlorinated."					
2,3-Dinitrotoluene (602-01-7)	GA	*	H(WS)	J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,4-Dinitrotoluene (121-14-2)	GA	*	H(WS)	J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,5-Dinitrotoluene (619-15-8)	GA	*	H(WS)	J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,6-Dinitrotoluene (606-20-2)	GA	*	H(WS)	J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
3,4-Dinitrotoluene (610-39-9)	GA	*	H(WS)	J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
3,5-Dinitrotoluene (618-85-9)	GA	*	H(WS)	J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					

Diphenamid (957-51-7)	GA	50	H(WS)	J
Diphenylamine (122-39-4)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Diphenylhydrazines (122-66-7; 530-50-7)	GA	ND*	H(WS)	F
Remark: * Applies to the sum of 1,1- and 1,2-diphenylhydrazine, CAS Nos. 530-50-7 and 122-66-7, respectively.				
Diquat (2764-72-9)	A, A-S, AA, AA-S GA	20* 20*	H(WS) H(WS)	B B
Remark: * Applies to the concentration of diquat ion whether free or as an undissociated salt.				
Disulfoton (298-04-4)	GA	*	H(WS)	
Remark: * Refer to standards for "Phorate and Disulfoton."				
Dyphylline (479-18-5)	A, A-S, AA, AA-S	50	H(WS)	B
Endosulfan (115-29-7)	A, A-S, AA, AA-S, B, C	0.009	A(C)	
	D	0.22*	A(A)	
	SA, SB, SC	0.001	A(C)	
	SD	0.034	A(A)	
Remark: * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(d) of this Title.				
Endrin (72-20-8)	A, A-S, AA, AA-S	0.2	H(WS)	G
	GA	ND	H(WS)	F
	A, A-S, AA, AA-S, B, C, D	0.002	H(FC)	
	SA, SB, SC, SD	0.002	H(FC)	
	A, A-S, AA, AA-S, B, C	0.036	A(C)	
	A, A-S, AA, AA-S, B, C, D	0.086	A(A)	
Endrin aldehyde (7421-93-4)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Endrin ketone (53494-70-5)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Ethylbenzene (100-41-4)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Ethylene dibromide (106-93-4)	A, A-S, AA, AA-S GA	6×10^{-4} 6×10^{-4}	H(WS) H(WS)	A A
Ethylenethiourea (96-45-7)	GA	ND	H(WS)	F

Ferbam (14484-64-1)	GA	4.2	H(WS)	F
Fluometuron (2164-17-2)	GA	50	H(WS)	J
Fluoride (CAS No. Not Applicable)	A, A-S, AA, AA-S	1500	H(WS)	H
	GA	1500	H(WS)	F
	A, A-S, AA, AA-S, B, C	*	A(C)	
	D	**	A(A)	
Remarks: * (0.02) exp(0.907 [ln (ppm hardness)] + 7.394) ** (0.1) exp(0.907 [ln (ppm hardness)] + 7.394) For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) and (d) of this Title.				
Foaming agents (CAS No. Not Applicable)	GA	500*	E(WS)	U
Remark: * Determined as methylene blue active substances (MBAS) or by other tests as specified by the Commissioner.				
Folpet (133-07-3)	GA	50	H(WS)	J
Formaldehyde (50-00-0)	A, A-S, AA, AA-S	8	H(WS)	A
	GA	8	H(WS)	A
Gross alpha radiation (CAS No. Not Applicable)	A, A-S, AA, AA-S	*	H(WS)	G
	GA	*	H(WS)	G
Remark: * 15 picocuries per liter, excluding radon and uranium.				
Gross beta radiation (CAS No. Not Applicable)	A, AA	*	H(WS)	H
	GA	*	H(WS)	H
Remark: * 1,000 picocuries per liter, excluding strontium-90 and alpha emitters.				
Heptachlor (76-44-8)	A, A-S, AA, AA-S	0.04	H(WS)	A
	GA	0.04	H(WS)	A
	A, A-S, AA, AA-S, B, C, D	2×10^{-4}	H(FC)	A
	SA, SB, SC, I, SD	2×10^{-4}	H(FC)	A
Heptachlor epoxide (1024-57-3)	A, A-S, AA, AA-S	0.03	H(WS)	A
	GA	0.03	H(WS)	A
	A, A-S, AA, AA-S, B, C, D	3×10^{-4}	H(FC)	A
	SA, SB, SC, I, SD	3×10^{-4}	H(FC)	A
Hexachlorobenzene (118-74-1)	A, A-S, AA, AA-S	0.04	H(WS)	A
	GA	0.04	H(WS)	A
	A, A-S, AA, AA-S, B, C, D	3×10^{-5}	H(FC)	A
	SA, SB, SC, I, SD	3×10^{-5}	H(FC)	A
Hexachlorobutadiene (87-68-3)	A, A-S, AA, A-S	0.5	H(WS)	B
	GA	0.5	H(WS)	B
	A, A-S, AA, AA-S, B, C, D	0.01	H(FC)	B
	SA, SB, SC, I, SD	0.01	H(FC)	B
	A, A-S, AA, AA-S, B, C	1.0*	A(C)	
	D	10*	A(A)	
	SA, SB, SC	0.3	A(C)	
	SD	3.0	A(A)	
Remark: * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) and (d) of this Title.				
alpha-Hexachlorocyclohexane (319-84-6)	A, A-S, AA, AA-S	0.01	H(WS)	A
	GA	0.01	H(WS)	A
	A, A-S, AA, AA-S, B, C, D	0.002	H(FC)	A
	SA, SB, SC, I, SD	0.002	H(FC)	A
beta-Hexachlorocyclohexane	A, A-S, AA, AA-S	0.04	H(WS)	A

(319-85-7)	GA A, A-S, AA, AA-S, B, C, D SA, SB, SC, I, SD	0.04 0.007 0.007	H(WS) H(FC) H(FC)	A A A
delta-Hexachlorocyclohexane (319-86-8)	A, A-S, AA, AA-S GA A, A-S, AA, AA-S, B, C, D SA, SB, SC, I, SD	0.04 0.04 0.008 0.008	H(WS) H(WS) H(FC) H(FC)	A A A A
epsilon-Hexachlorocyclohexane (6108-10-7)	A, A-S, AA, AA-S GA A, A-S, AA, AA-S, B, C, D SA, SB, SC, I, SD	0.04 0.04 0.008 0.008	H(WS) H(WS) H(FC) H(FC)	A A A A
gamma-Hexachlorocyclohexane (58-89-9)	A, A-S, AA, AA-S GA A, A-S, AA, AA-S, B, C, D SA, SB, SC, I, SD A, A-S, AA, AA-S, B, C, D	0.05 0.05 0.008 0.008 0.95	H(WS) H(WS) H(FC) H(FC) A(A)	A A A A A
Hexachlorocyclopentadiene (77-47-4)	GA A, A-S, AA, AA-S, B, C D SA, SB, SC SD A, A-S, AA, AA-S	* 0.45** 4.5** 0.07 0.7 1.0	H(WS) A(C) A(A) A(C) A(A) E	J U
Remarks: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
** For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) and (d) of this Title.				
Hexachloroethane (67-72-1)	A, A-S, AA, AA-S GA A, A-S, AA, AA-S, B, C, D SA, SB, SC, I, SD	5 * 0.6 0.6	H(WS) H(WS) H(FC) H(FC)	A, I J A A
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Hexachlorophene (70-30-4)	GA A, A-S, AA, AA-S GA A, A-S, AA, AA-S, B, C, D	* ** ** ***	H(WS) E(WS) E(WS) E(FS)	J
Remarks: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
** Refer to standards for "Phenolic compounds (total phenols)."				
*** Refer to standards for "Phenols, total chlorinated."				
Hexachloropropene (1888-71-7)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Hexazinone (51235-04-2)	GA	50	H(WS)	J
Hydrazine (302-01-2)	A, A-S, AA, AA-S, B, C D	* **	A(C) A(A)	
Remarks: * 5 ug/L at less than 50 ppm hardness and 10 ug/L at greater than or equal to 50 ppm hardness.				
** 50 ug/L at less than 50 ppm hardness and 100 ug/L at greater than or equal to 50 ppm hardness.				
For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) and (d) of this Title.				
Hydrogen sulfide (7783-06-4)	A, A-S, AA, AA-S, B, C SA, SB, SC	2.0* 2.0	A(C) A(C)	
Remark: * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) of this Title.				
Aquatic Type standards apply to undissociated form.				

Hydroquinone (123-31-9)	A, A-S, AA, AA-S, B, C	2.2**	A(C)	
	D	4.4**	A(A)	
	A, A-S, AA, AA-S	*	E(WS)	
	GA	*	E(WS)	
	A, A-S, AA, AA-S, B, C, D	***	E(FS)	
Remarks: * Refer to standards for "Phenolic compounds (total phenols)."				
** For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) and (d) of this Title.				
*** Refer to standards for "Phenols, total unchlorinated."				
Iron (CAS No. Not Applicable)	A, A-S, AA, AA-S	300	E(WS)	G
	GA	300*	E(WS)	F
Remarks: * Also see standard for "Iron and Manganese."				
Iron and Manganese (CAS No. Not Applicable)	GA	500*	E(WS)	F
Remark: * Applies to the sum of these substances; also see individual standards for "Iron" and "Manganese."				
Isodecyl diphenyl phosphate (29761-21-5)	A, A-S, AA, AA-S, B, C	1.7*	A(C)	
	D	22*	A(A)	
Remark: * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) and (d) of this Title.				
Isodrin (465-73-6)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Isopropalin (33820-53-0)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Isopropylbenzene (98-82-8)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
2-Isopropyltoluene (527-84-4)	A, A-S, AA, AA-S	5	H(WS)	I
	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
3-Isopropyltoluene (535-77-3)	A, A-S, AA, AA-S	5	H(WS)	I
	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
4-Isopropyltoluene (99-87-6)	A, A-S, AA, AA-S	5	H(WS)	I
	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Isothiazolones, total (isothiazolinones) (includes 5-chloro-2-methyl-4-isothiazolin-3-one)	A, A-S, AA, AA-S, B, C	1*	A(C)	
	D	10*	A(A)	

& 2-methyl-4-isothiazolin-3-one) (CAS No. Not Applicable)						
Remark: * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) and (d) of this Title. Standards apply to the sum of these substances.						
Kepone (143-50-0)	GA	ND	H(WS)	F		
Lead (CAS No. Not Applicable)	A, A-S, AA, AA-S	50	H(WS)	G		
	GA	25	H(WS)	F		
	A, A-S, AA, AA-S, B, C	*	A(C)			
	A, A-S, AA, AA-S, B, C, D	**	A(A)			
	SA, SB, SC, I	8	A(C)			
	SA, SB, SC, I, SD	204	A(A)			
Remarks: * {1.46203 - [ln (hardness) (0.145712)]} exp (1.273 [ln (hardness)] - 4.297) ** {1.46203 - [ln (hardness) (0.145712)]} exp (1.273 [ln (hardness)] - 1.052) Aquatic Type standards apply to dissolved form.						
Linear alkyl benzene sulfonates (LAS) (CAS No. Not Applicable)	A, A-S, AA, AA-S, B, C	40*	A(C)			
Remark: * LAS with side chains greater than 13 carbons only; applies to the sum of these substances. * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) of this Title.						
Magnesium (CAS No. Not Applicable)	A, A-S, AA, AA-S	35,000	H(WS)	B		
Malathion (121-75-5)	GA	7.0	H(WS)	F		
	A, A-S, AA, AA-S, B, C	0.1*	A(C)			
	SA, SB, SC	0.1	A(C)			
Remark: * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) of this Title.						
Mancozeb (8018-01-7)	GA	1.8	H(WS)	F		
Maneb (12427-38-2)	GA	1.8	H(WS)	F		
Manganese (CAS No. Not Applicable)	A, A-S, AA, AA-S	300	E(WS)	G		
	GA	300*	E(WS)	F		
Remark: * Also see standards for "Iron and Manganese."						
Mercury (CAS No. Not Applicable)	A, A-S, AA, AA-S	0.7	H(WS)	B		
	GA	0.7	H(WS)	B		
	A, A-S, AA, AA-S, B, C, D	7×10^{-4} *	H(FC)	B		
	SA, SB, SC, I, SD	7×10^{-4} *	H(FC)	B		
	A, A-S, AA, AA-S, B, C	0.77*	A(C)			
	A, A-S, AA, AA-S, B, C, D	1.4*	A(A)			
	A, A-S, AA, AA-S, B, C, D	0.0026*	W			
	SA, SB, SC, I, SD	0.0026*	W			
	Remark * Applies to dissolved form.					
	Methacrylonitrile (126-98-7)	GA	*	H(WS)	J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.						

Methomyl (16752-77-5)	GA	*	H(WS)	
Remark: * Refer to standard for "Aldicarb and Methomyl."				
Methoxychlor (72-43-5)	A, A-S, AA, AA-S	35	H(WS)	H
	GA	35	H(WS)	F
	A, A-S, AA, AA-S, B, C	0.03*	A(C)	
	SA, SB, SC	0.03	A(C)	
Remark: * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) of this Title.				
N-Methylaniline (100-61-8)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Methyl chloride (74-87-3)	A, A-S, AA, AA-S	5	H(WS)	I
	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
2-Methyl-4-chlorophenoxyacetic acid (94-74-6)	GA	0.44	H(WS)	F
4,4'-Methylene-bis-(2-chloroaniline) (101-14-4)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
4,4'-Methylene-bis-(N-methyl)aniline (1807-55-2)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
4,4'-Methylene-bis-(N,N'-dimethyl)aniline (101-61-1)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Methylene bithiocyanate (6317-18-6)	A, A-S, AA, AA-S, B, C	1.0*	A(C)	
Remark: * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) of this Title.				
Methylene chloride (75-09-2)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
	A, A-S, AA, AA-S, B, C, D SA,SB, SC, I, SD	200 200	H(FC) H(FC)	A A
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Methyl iodide (74-88-4)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Methyl methacrylate (80-62-6)	GA	50	H(WS)	J
Methyl parathion	GA A, A-S, AA, AA-S, B, C	* *	H(WS) A(C)	

(298-00-0)					
Remark: * Refer to the standards for "Parathion and Methyl parathion."					
alpha-Methylstyrene (98-83-9)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2-Methylstyrene (611-15-4)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
3-Methylstyrene (100-80-1)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
4-Methylstyrene (622-97-9)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Metolachlor (51218-45-2)	A, A-S, AA, AA-S GA	10 10	H(WS) H(WS)	A A	
Metribuzin (21087-64-9)	GA	50	H(WS)	J	
Mirex (2385-85-5)	A, A-S, AA, AA-S GA A, A-S, AA, AA-S, B, C, D SA, SB, SC, I, SD A, A-S, AA, AA-S, B, C D SA, SB, SC	0.03 0.03 1×10^{-6} 1×10^{-6} 0.001* 0.001*	H(WS) H(WS) H(FC) H(FC) A(C) A(A) A(C)	A A A A A	
Remark: * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) and (d) of this Title.					
Nabam (142-59-6)	GA	1.8	H(WS)	F	
Naphthalene (91-20-3)	A, A-S, AA, AA-S	10	E(WS)	U	
Niacinamide (98-92-0)	A, A-S, AA, AA-S	500	H(WS)	B	
Nickel (CAS No. Not Applicable)	A, A-S, AA, AA-S GA A, A-S, AA, AA-S, B, C A, A-S, AA, AA-S, B, C, D SA, SB, SC, I SA, SB, SC, I, SD	100 100 * ** 8.2 74	H(WS) H(WS) A(C) A(A) A(C) A(A)	B B	
Remarks: * $(0.997) \exp(0.846 [\ln(\text{hardness})] + 0.0584)$ ** $(0.998) \exp(0.846 [\ln(\text{hardness})] + 2.255)$ Aquatic Type standards apply to dissolved form.					
Nitralin (4726-14-1)	GA	35	H(WS)	F	

Nitrate (expressed as N) (CAS No. Not Applicable)	A, A-S, AA, AA-S GA	10,000* 10,000*	H(WS) H(WS)	G G
Remark: * Also see standards for "Nitrate and Nitrite."				
Nitrate and Nitrite (expressed as N) (CAS No. Not Applicable)	A, A-S, AA, AA-S GA	10,000* 10,000*	H(WS) H(WS)	G G
Remark: * Applies to the sum of these substances; also see individual standards for "Nitrate" and "Nitrite."				
Nitrotriacetic acid (CAS No. Not Applicable)	A, A-S, AA, AA-S GA A, A-S, AA, AA-S, B, C	3* 3* 5,000**	H(WS) H(WS) A(C)	A A
Remarks: * Includes related forms that convert to nitrotriacetic acid upon acidification to a pH of 2.3 or less. ** Applies to nitrotriacetate. ** For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) of this Title.				
Nitrite (expressed as N) (CAS No. Not Applicable)	A, A-S, AA, AA-S GA A, A-S, AA, AA-S, B, C	1,000* 1,000* **	H(WS) H(WS) A(C)	G G
Remarks: * Also see standards for "Nitrate and Nitrite." ** Standard is 100 ug/L except 20 ug/L for trout waters (T or TS). ** For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) of this Title.				
2-Nitroaniline (88-74-4)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
3-Nitroaniline (99-09-2)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
4-Nitroaniline (100-01-6)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Nitrobenzene (98-95-3)	A, A-S, AA, AA-S GA A, A-S, AA, AA-S	0.4 0.4 30	H(WS) H(WS) E(WS)	A A U
2-Nitrotoluene (88-72-2)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
3-Nitrotoluene (99-08-1)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
4-Nitrotoluene (99-99-0)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
5-Nitro-o-toluidine (99-55-8)	GA	*	H(WS)	J

Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Octachlorostyrene (29082-74-4)	A, A-S, AA, AA-S	0.2	H(WS)	B
	GA	0.2	H(WS)	B
	A, A-S, AA, AA-S, B, C, D	6 x 10 ⁻⁶	H(FC)	B
	SA, SB, SC, I, SD	6 x 10 ⁻⁶	H(FC)	B
Oxamyl (23135-22-0)	GA	50	H(WS)	J
Paraquat (4685-14-7)	GA	3.0	H(WS)	F
Parathion (56-38-2)	GA	*	H(WS)	
	A, A-S, AA, AA-S, B, C	*	A(C)	
	A, A-S, AA, AA-S, B, C, D	0.065	A(A)	
Remark: * Refer to standards for "Parathion and Methyl parathion."				
Parathion and Methyl parathion (56-38-2; 298-00-0)	GA A, A-S, AA, AA-S, B, C	1.5* 0.008**	H(WS) A(C)	F
Remarks: * Applies to the sum of these substances. ** Applies to the sum of these substances. For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) of this Title.				
Pendimethalin (40487-42-1)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Pentachlorobenzene (608-93-5)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Pentachloroethane (76-01-7)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Pentachloronitrobenzene (82-68-8)	GA	ND	H(WS)	F
Pentachlorophenol (87-86-5)	A, A-S, AA, AA-S, B, C	*	A(C)	
	A, A-S, AA, AA-S, B, C, D	**	A(A)	
	A, A-S, AA, AA-S	***	E(WS)	
	GA	***	E(WS)	
	A, A-S, AA, AA-S, B, C, D	****	E(FS)	
Remarks: * exp [1.005 (pH) - 5.134] ** exp [1.005 (pH) - 4.869] *** Refer to standards for "Phenolic compounds (total phenols)." **** Refer to standards for "Phenols, total chlorinated."				
Phenol (108-95-2)	A, A-S, AA, AA-S	*	E(WS)	
	GA	*	E(WS)	

	A, A-S, AA, AA-S, B, C, D	**	E(FS)	
Remarks: * Refer to standards for "Phenolic compounds (total phenols)."				
** Refer to standards for "Phenols, total unchlorinated."				
Phenolic compounds (total phenols) (CAS No. Not Applicable)	A, A-S, AA, AA-S GA	1* 1*	E(WS) E(WS)	U U
Remark: * Applies to the sum of these substances.				
Phenols, total chlorinated (CAS No. Not Applicable)	A, A-S, AA, AA-S GA A, A-S, AA, AA-S, B, C, D	* * 1.0**	E(WS) E(WS) E(FS)	V
Remarks: * Refer to standards for "Phenolic compounds (total phenols)."				
** Applies to the sum of these substances.				
Phenols, total unchlorinated (CAS No. Not Applicable)	A, A-S, AA, AA-S GA A, A-S, AA, AA-S, B, C, D	* * 5.0**	E(WS) E(WS) E(FS)	V
Remarks: * Refer to standards for "Phenolic compounds (total phenols)."				
** Applies to the sum of these substances.				
1,2-Phenylenediamine (95-54-5)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
1,3-Phenylenediamine (108-45-2)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
1,4-Phenylenediamine (106-50-3)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Phenyl ether (101-84-8)	A, A-S, AA, AA-S	10	E(WS)	U
Phenyldiazine (100-63-0)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
3-Phenyl-1-propene (637-50-3)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
cis-1-Phenyl-1-propene (766-90-5)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
trans-1-Phenyl-1-propene (873-66-5)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Phorate	GA	*	H(WS)	

(298-02-2)				
Remark: * Refer to standards for "Phorate and Disulfoton."				
Phorate and Disulfoton (298-02-2; 298-04-4)	GA	ND*	H(WS)	F
Remark: * Applies to sum of these substances.				
Picloram (CAS No. Not Applicable)	GA	50*	H(WS)	J
Remark: * Includes: related forms that convert to the organic acid upon acidification to a pH of 2 or less; and esters of the organic acid.				
Polybrominated biphenyls (CAS No. Not Applicable)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to each congener individually.				
Polychlorinated biphenyls (CAS No. Not Applicable)	A, A-S, AA, AA-S	0.09*	H(WS)	A
	GA	0.09*	H(WS)	A
	A, A-S, AA, AA-S, B, C, D	1 x 10 ⁻⁶ *	H(FC)	A
	SA, SB, SC, I, SD	1 x 10 ⁻⁶ *	H(FC)	A
	A, A-S, AA, AA-S, B, C, D	1.2 x 10 ⁻⁴ *	W	
	SA, SB, SC, I, SD	1.2 x 10 ⁻⁴ *	W	
Remark: * Applies to the sum of these substances.				
Principal organic contaminant (CAS No. Not Applicable)	GA	5	H(WS)	J
<p>Remarks: This standard applies to any and every individual substance, whether listed in this Table or not, that is in one of the principal organic contaminant classes as defined in section 700.1 of this Title except any substance that has a H(WS) Type standard for class GA waters (other than 5 ug/L with Basis Code J) listed elsewhere in this Table.</p> <p>For the convenience of the reader, the principal organic contaminant standard of 5 ug/L (Basis Code J), is listed in this Table for some but not all substances regulated by this standard.</p> <p>A less stringent guidance value for an individual substance may be substituted for this standard if so determined by the Commissioner of the New York State Department of Health.</p>				
Prometon (1610-18-0)	GA	50	H(WS)	J
Propachlor (1918-16-7)	GA	35	H(WS)	F
Propanil (709-98-8)	GA	7.0	H(WS)	F
Propazine (139-40-2)	GA	16	H(WS)	F
Propham (122-42-9)	GA	50	H(WS)	J
n-Propylbenzene (103-65-1)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Quaternary ammonium compounds (including dimethyl benzylammonium chloride &	A, A-S, AA, AA-S, B, C	10*	A(C)	

dimethylethyl benzyl ammonium chloride (CAS No. Not Applicable)					
Remarks: * Applies to the sum of these substances. * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) of this Title.					
Radium 226 (CAS No. Not Applicable)	A, AA GA	* *	H(WS) H(WS)	H H	
Remark: * 3 picocuries per liter; also see standards for "Radium 226 and Radium 228."					
Radium 226 and Radium 228 (CAS No. Not Applicable)	A, A-S, AA, AA-S GA	* *	H(WS) H(WS)	G G	
Remark: * 5 picocuries per liter; Applies to the sum of these substances.					
Radium 228 (CAS No. Not Applicable)	A, A-S, AA, AA-S GA	* *	H(WS) H(WS)		
Remark: * Refer to standards for "Radium 226 and Radium 228."					
Selenium (CAS No. Not Applicable)	A, A-S, AA, AA-S	10	H(WS)	G	
	GA	10	H(WS)	G	
	A, A-S, AA, AA-S, B, C	4.6*	A(C)		
Remark: * Aquatic Type standard applies to dissolved form.					
Silver (CAS No. Not Applicable)	A, A-S, AA, AA-S	50	H(WS)	G	
	GA	50	H(WS)	F	
	A, A-S, AA, AA-S, B, C	0.1*	A(C)		
	D	**	A(A)		
	SD	2.3	A(A)		
Remarks: * Applies to ionic silver. ** $\exp(1.72 [\ln (\text{ppm hardness})] - 6.52)$. Standards for D and SD Classes apply to acid-soluble form. For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) and (d) of this Title.					
Simazine (122-34-9)	A, A-S, AA, AA-S	0.5	H(WS)	A	
	GA	0.5	H(WS)	A	
Sodium (CAS No. Not Applicable)	GA	20,000	H(WS)	H	
Strontium 90 (CAS No. Not Applicable)	A, A-S, AA, AA-S	*	H(WS)	G	
Remarks: * 8 picocuries per liter. If two or more radionuclides are present, the sum of their doses shall not exceed an annual potential dose of 4 millirems per year.					
Styrene (100-42-5)	GA	*	H(WS)	J	U
	A, A-S, AA, AA-S	50	E(WS)		
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Sulfate (CAS No. Not Applicable)	A, A-S, AA, AA-S	250,000	H(WS)	G	
	GA	250,000	H(WS)	F	

Sulfite (CAS No. Not Applicable)	A, A-S, AA, AA-S, B, C	200*	A(C)	
Remark: * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) of this Title.				
Tebuthiuron (34014-18-1)	GA	50	H(WS)	J
Terbacil (5902-51-2)	GA	50	H(WS)	J
Tetrachlorobenzenes (634-66-2; 634-90-2; 95-94-3; 12408-10-5)	GA A, A-S, AA, AA-S	* 10**	H(WS) E(WS)	J U
Remarks: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to each isomer (1,2,3,4-, 1,2,3,5-, and 1,2,4,5-tetrachlorobenzene) individually. ** Applies to the sum of 1,2,3,4-, 1,2,3,5- and 1,2,4,5-tetrachlorobenzene.				
1,1,1,2-Tetrachloroethane (630-20-6)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
1,1,2,2-Tetrachloroethane (79-34-5)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Tetrachloroethene (127-18-4)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Tetrachloroterephthalic acid (2136-79-0)	GA	50	H(WS)	J
alpha, alpha, alpha, 4-Tetrachlorotoluene (5216-25-1)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Thallium (CAS No. Not Applicable)	A, A-S, AA, AA-S, B, C D	8* 20	A(C) A(A)	
Remark: * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) of this Title. Aquatic Type standards apply to acid-soluble form.				
Theophylline (58-55-9)	A, A-S, AA, AA-S	40	H(WS)	B
Thiram (137-26-8)	GA	1.8	H(WS)	F
Toluene (108-88-3)	A, A-S, AA, AA-S	5	H(WS)	I
	GA	*	H(WS)	J
	A, A-S, AA, AA-S, B, C, D	6000	H(FC)	B
	SA, SB, SC, I, SD	6000	H(FC)	B
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				

Toluene-2,4-diamine (95-80-7)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Toluene-2,5-diamine (95-70-5)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Toluene-2,6-diamine (823-40-5)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
o-Toluidine (95-53-4)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Toxaphene (8001-35-2)	A, A-S, AA, AA-S	0.06	H(WS)	A
	GA	0.06	H(WS)	A
	A, A-S, AA, AA-S, B, C, D	6 x 10 ⁻⁶	H(FC)	A
	SA, SB, SC, I, SD	6 x 10 ⁻⁶	H(FC)	A
	A, A-S, AA, AA-S, B, C	0.005	A(C)	
	D	1.6*	A(A)	
	SA, SB, SC	0.005	A(C)	
Remark: * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic standard if so determined under section 702.15(d) of this Title.				
1,2,4-Tribromobenzene (615-54-3)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
2,4,6-Trichloroaniline (634-93-5)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Trichlorobenzenes (87-61-6; 120-82-1; 108-70-3; 12002-48-1)	GA	*	H(WS)	J
	A, A-S, AA, AA-S, B, C	5**	A(C)	
	SA, SB, SC	5**	A(C)	
	A, A-S, AA, AA-S	10**	E(WS)	U
	D	50**	E(FS)	V
	SD	50**	E(FS)	V
Remarks: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to each isomer (1,2,3-, 1,2,4- and 1,3,5-trichlorobenzene) individually. ** Applies to the sum of 1,2,3-, 1,2,4- and 1,3,5-trichlorobenzene. For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) of this Title				
1,1,1-Trichloroethane (71-55-6)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				

Table) applies to this substance.				
1,1,2-Trichloroethane (79-00-5)	A, A-S, AA, AA-S GA	1 1	H(WS) H(WS)	A A
Trichloroethene (79-01-6)	A, A-S, AA, AA-S	5	H(WS)	I
	GA	*	H(WS)	J
	A, A-S, AA, AA-S, B, C, D	40	H(FC)	A
	SA, SB, SC, I, SD	40	H(FC)	A
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Trichlorofluoromethane (75-69-4)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
2,4,5-Trichlorophenoxyacetic acid (93-76-5)	GA	35	H(WS)	F
2,4,5-Trichlorophenoxypropionic acid (93-72-1)	A, A-S, AA, AA-S GA	10 0.26	H(WS) H(WS)	G F
1,1,2-Trichloropropane (598-77-6)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
1,2,3-Trichloropropane (96-18-4)	A, A-S, AA, AA-S GA	0.04 0.04	H(WS) H(WS)	A A
cis-1,2,3-Trichloropropene (13116-57-9)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
trans-1,2,3-Trichloropropene (13116-58-0)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
alpha,2,4-Trichlorotoluene (94-99-5)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
alpha,2,6-Trichlorotoluene (2014-83-7)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
alpha,3,4-Trichlorotoluene (102-47-6)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
alpha,alpha,2-Trichlorotoluene (88-66-4)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				

Table) applies to this substance.				
alpha,alpha,4-Trichlorotoluene (13940-94-8)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
2,3,4-Trichlorotoluene (7359-72-0)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
2,3,5-Trichlorotoluene (56961-86-5)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
2,3,6-Trichlorotoluene (2077-46-5)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
2,4,5-Trichlorotoluene (6639-30-1)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
2,4,6-Trichlorotoluene (23749-65-7)	GA	*	H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
1,1,1-Trichloro-2,2,2-trifluoroethane (354-58-5)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
1,1,2-Trichloro-1,2,2-trifluoroethane (76-13-1)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Trifluralin (1582-09-8)	GA	35	H(WS)	F
1,2,3-Trimethylbenzene (526-73-8)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
1,2,4-Trimethylbenzene (95-63-6)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
1,3,5-Trimethylbenzene (108-67-8)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
sym-Trinitrobenzene	GA	*	H(WS)	J

(99-35-4)					
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,3,4-Trinitrotoluene (602-29-9)	GA	*	H(WS)	J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,3,6-Trinitrotoluene (18292-97-2)	GA	*	H(WS)	J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,4,5-Trinitrotoluene (610-25-3)	GA	*	H(WS)	J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,4,6-Trinitrotoluene (118-96-7)	GA	*	H(WS)	J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
3,4,5-Trinitrotoluene (603-15-6)	GA	*	H(WS)	J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Triphenyl phosphate (115-86-6)	A, A-S, AA, AA-S, B, C D	4* 40*	A(C) A(A)		
Remark: * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) and (d) of this Title.					
Tritium (CAS No. Not Applicable)	A, A-S, AA, AA-S	*	H(WS)	G	
Remark: * 20,000 picocuries per liter; if two or more radionuclides are present, the sum of their annual dose equivalent to the total body or any organ shall not exceed 4 millirems per year.					
Uranyl ion (Cas No. Not Applicable)	GA	5,000	H(WS)	H	
Vanadium (CAS No. Not Applicable)	A, A-S, AA, AA-S, B, C D	14* 190*	A(C) A(A)		
Remark: * For the waters of the Great Lakes System, the department will substitute a guidance value for the aquatic Type standard if so determined under section 702.15(c) and (d) of this Title. Aquatic Type standards apply to acid-soluble form.					
Vinyl chloride (75-01-4)	GA	2	H(WS)	G	
1,2-Xylene (95-47-6)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
1,3-Xylene (108-38-3)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this					

Table) applies to this substance.				
1,4-Xylene (106-42-3)	A, A-S, AA, AA-S GA	5 *	H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.				
Zinc (CAS No. Not Applicable)	A, A-S, AA, AA-S, B, C A, A-S, AA, AA-S, B, C, D SA, SB, SC, I SD	* ** 66 95	A(C) A(A) A(C) A(A)	
Remarks: Aquatic Type standards apply to dissolved form. * $\exp(0.85 [\ln(\text{ppm hardness})] + 0.50)$ ** $0.978 \exp(0.8473 [\ln(\text{ppm hardness})] + 0.884)$				
Zineb (12122-67-7)	GA	1.8	H(WS)	F
Ziram (137-30-4)	GA	4.2	H(WS)	F

**Table 2
BASIS OF STANDARDS
(cf. section 703.5)**

BASIS CODE	BASIS
A	Oncogenic, Human Health
B	Non-oncogenic, Human Health
F	Former Groundwater Regulations, 6 NYCRR 703.5(a)(3), Human Health or Aesthetics
G	Specific MCL, Human Health or Aesthetics
H	Former Use of or Reference to 10 NYCRR Part 170, Human Health or Aesthetics
I	Principal Organic Contaminant Classes, Human Health
J	Former Groundwater Reference to 10 NYCRR Subpart 5-1, General Standards, Human Health
U	Potable Water, Aesthetics
V	Food Source, Aesthetics

Historical Note

Sec. filed March 20, 1967; repealed, new filed: April 28, 1972; Aug. 2, 1978, amd. filed Nov. 5, 1984; repealed, new filed Aug. 2, 1991; amds. filed: Dec. 10, 1993; Feb. 10, 1998; Mar. 22, 1999 eff. April 7, 1999. Amended (f), Table (1). **The text reflects revisions filed January 17, 2008 and effective February 16, 2008.**

§703.6 Groundwater effluent limitations for discharges to Class GA waters

(a) The groundwater effluent limitations in Table 3 of subdivision (e) of this section and effluent limitations as established by section 702.16(c)(1) of this Title apply to a discharge from a point source or outlet or any other discharge within the meaning of the Environmental Conservation Law, section 17-0501 that will or may enter the waters of the State. Unless a demonstration is made to the contrary, it shall be presumed that a discharge to the ground or unsaturated zone is a discharge to groundwater. The groundwater effluent limitation is the maximum allowable concentration in micrograms per liter (ug/L), unless otherwise noted.

Table 2
Endpoint Soil Samples Organic Analytical Results (Don Carlo)

Sample Identification	EP-1 (#1)	EP-2 (#1)	EP-3 (#1)	EP-4 (#1)	BS-1 (#1)	EP-1 (#2)	EP-2 (#2)	EP-3 (#2)	EP-4 (#2)	UUSCO
Sample Depth	12'	12'	12'	12'	18'	12'	12'	12'	12'	
Sample Date	7/2/2008	7/2/2008	7/2/2008	7/2/2008	7/2/2008	7/2/2008	7/2/2008	7/2/2008	7/2/2008	
Sample Matrix	Soil									
Units	ug/kg									
Volatile Organic Compounds (µg/kg)										
Methylene Chloride	19	18	17	18	17	22	22	21	22	500
Semi-Volatile Organic Compounds (µg/kg)										
Phenanthrene	120	ND	ND	520	1,200	140	130	200	250	100,000
Anthracene	ND	ND	ND	110	120	ND	ND	ND	ND	100,000
Fluoranthene	240	180	140	660	920	270	260	270	390	100,000
Pyrene	170	140	120	420	890	230	290	290	430	100,000
Benzo (a) Anthracene	ND	ND	ND	170	340	ND	ND	ND	ND	1,000
Chrysene	97	ND	ND	200	400	120	140	140	180	1,000
Benzo (b) Fluoranthene	89	ND	ND	180	300	99	160	140	160	1,000
Benzo (k) Fluoranthene	91	ND	ND	180	290	110	120	97	180	800
Benzo (a) Pyrene	ND	ND	ND	190	340	100	140	110	170	1,000
Diethylphthalate	160	150	260	160	300	ND	ND	ND	ND	NS
Naphthalene	ND	ND	ND	ND	180	ND	ND	ND	ND	100,000
Benzo (g,h,l) Perylene	ND	ND	ND	140	ND	ND	ND	ND	ND	100,000
Total SVOCs	967	470	520	2,930	5,280	1,069	1,240	1,247	1,760	NS

NS...No Standard

ND...Not Detected

#1...former location of fuel oil and water oil underground storage tanks

#2...former location of gasoline underground storage tanks

Shaded values represent concentration exceeding the UUSCO

UUSCO...Unrestricted Use Soil Cleanup Objectives (6 NYC RR Pt.375-6.8)

This Table Lists Only Compounds Detected At Concentrations Exceeding Their Respective Method Detection Limit.

**Table 2 (Cont.)
Shallow Soil Samples Organic Analytical Results (Hydro Tech)**

Sample Identification	SP-1	SP-2	SP-3	SP-4	SP-5	SP-6	SP-7	SP-8	SP-9	SP-10	SP-11	SP-12	SP-16	SP-17	SP-18	UUSCO
Sample Depth	0-2'	0-2'	0-2'	0-2'	0-2'	0-2'	0-2'	0-2' (*)	0-2' (*)	0-2' (*)	0-2' (*)	0-2' (*)	0-2' (*)	0-2' (*)	0-2' (*)	
Sample Date	4/24/2009	4/24/2009	4/27/2009	4/24/2009	4/27/2009	4/24/2009	4/24/2009	4/28/2009	4/28/2009	4/28/2009	4/28/2009	4/28/2009	11/2/2009	11/2/2009	11/2/2009	
Sample Matrix	Soil															
Units	ug/kg															
Volatile Organic Compounds (µg/kg)																
ND																
Semi-Volatile Organic Compounds (µg/kg)																
Acenaphthylene	ND	ND	ND	ND	ND	ND	420	ND	100,000							
Phenanthrene	3,000	1,400	8,500	790	ND	850	8,900	540	ND	100,000						
Anthracene	ND	ND	1,800	ND	ND	ND	2,200	ND	100,000							
Fluoranthene	3,400	2,000	9,200	790	520	2,900	27,000	840	ND	100,000						
Pyrene	2,900	1,800	8,700	730	530	3,400	32,000	990	ND	100,000						
Benzo (a) Anthracene	2,000	1,200	5,900	ND	ND	1,600	16,000	470	ND	1,000						
Chrysene	2,000	1,300	6,200	ND	400	1,700	16,000	440	ND	1,000						
bis (2-Ethyl Hexyl) Phthalate	ND	ND	ND	ND	700	ND	NS									
Benzo (b) Fluoranthene	2,200	1,500	7,000	410	480	1,900	16,000	430	ND	1,000						
Benzo (k) Fluoranthene	900	600	2,700	ND	ND	640	5,000	ND	800							
Benzo (a) Pyrene	1,700	1,100	4,800	ND	ND	1,600	14,000	400	ND	1,000						
Indeno (1,2,3-cd) Pyrene	ND	450	1,500	ND	ND	770	6,800	ND	500							
Dibenzo (a,h) Anthracene	ND	ND	ND	ND	ND	ND	2,000	ND	330							
Benzo (g,h,i) Perylene	ND	440	1,400	ND	ND	980	8,800	ND	100,000							
Total SVOCs	18,100	11,790	57,700	2,720	2,630	16,340	155,120	4,110	ND	NS						
Pesticides																
ND																
PCBs																
ND																

NS...No Standard

ND...Not Detected

*... Depth from the a basement slab

Shaded values represent concentration exceeding the UUSCO

UUSCO...Unrestricted Use Soil Cleanup Objectives (6 NYC RR Pt.375-6.8)

This Table Lists Only Compounds Detected At Concentrations Exceeding Their Respective Method Detection Limit.

**Table 2 (Cont.)
Shallow Soil Samples Inorganic Analytical Results (Hydro Tech)**

Sample Identification	SP-1	SP-2	SP-3	SP-4	SP-5	SP-6	SP-7	SP-8	SP-9	SP-10	SP-11	SP-12	SP-16	SP-17	SP-18	UUSCO
Sample Depth	0-'2'	0-'2'	0-'2'	0-'2'	0-'2'	0-'2'	0-'2'	0-'2' (*)	0-'2' (*)	0-'2' (*)	0-'2' (*)	0-'2' (*)	0-'2' (*)	0-'2' (*)	0-'2' (*)	
Sample Date	4/24/2009	4/24/2009	4/27/2009	4/24/2009	4/27/2009	4/24/2009	4/24/2009	4/28/2009	4/28/2009	4/28/2009	4/28/2009	4/28/2009	11/2/2009	11/2/2009	11/2/2009	
Sample Matrix	Soil															
Units	ug/kg															
Aluminum	5,520	6,930	9,600	18,500	6,820	24,300	7,490	9,260	8,090	11,600	9,760	4,970	7,430	5,070	9,060	NS
Antimony	ND	ND	ND	ND	ND	4.6	ND	NS								
Arsenic	4.5	7.6	7.8	ND	3.8	ND	5.3	1	2.5	1.4	2.8	4.7	1.1	ND	2.4	13
Barium	146	776	498	282	332	282	177	76.8	107	85.5	78.1	40.6	103	35.4	55.7	350
Beryllium	0.5	0.42	0.61	0.93	0.56	0.65	0.38	0.45	0.39	0.63	0.46	ND	0.32	ND	0.35	7.2
Cadmium	2.34	1.84	2.27	0.56	1.81	0.46	2.85	ND	0.63	ND	ND	ND	ND	ND	ND	2.5
Calcium	66,000	35,800	49,600	2,580	44,200	2,270	41,200	9,320	21,700	10,200	12,000	24,000	26,400	41,000	28,200	NS
Total Chromium	15.6	19.8	25.5	31.4	18.3	55.1	31.1	21.8	21.9	27.3	25.6	13.4	ND	ND	ND	NS
Chromium Hexavalent	x	x	x	x	x	x	x	x	x	x	x	x	ND	ND	ND	1
Chromium Trivalent	x	x	x	x	x	x	x	x	x	x	x	x	18.2	16.5	17.1	30
Cobalt	7.47	8.35	12.8	7.89	9.79	18.1	8.65	8.25	7.75	11.1	9.54	5.43	6.28	4.22	6.76	NS
Copper	42.2	75.9	81.8	39.1	214	48.7	114	32	19.3	26.9	21	21.4	20	11.6	21.6	50
Iron	12,700	17,100	29,200	22,000	14,700	43,200	29,600	14,800	14,500	23,500	17,400	11,500	15,400	9,650	17,000	NS
Lead	125	504	269	28.1	320	50.1	670	25.5	127	19.8	19.4	13.1	34.3	2.13	32.9	63
Magnesium	37,100	97.2	29,600	6,550	250,000	10,800	20,800	2,620	2,710	5,360	4,490	2,450	2,760	2,310	5,580	NS
Manganese	234	299	271	212	200	384	293	303	288	450	294	112	228	102	224	1,600
Mercury	0.16	0.44	0.15	0.15	0.15	0.1	0.26	ND	0.18							
Nickel	23.2	22	31.1	19.8	63.4	26.5	22.6	13.7	13.6	17.7	16.3	10.2	12.1	9.01	12	30
Potassium	2,250	1,730	5,420	7,020	3,180	12,000	2,180	1,540	1,580	2,420	1,720	972	1,670	773	1,340	NS
Sodium	141	177	157	337	570	317	216	231	206	212	181	224	292	225	490	NS
Thallium	ND	ND	ND	4.7	ND	NS										
Vanadium	28	29	46.5	63.3	33.5	82.4	27.7	25.5	26.1	38.2	34.3	25.2	25	19.9	20.4	NS
Zinc	133	438	231	77.5	326	108	258	103	114	55.2	51.3	49.2	71.3	17.8	68.8	109

ND...not detected

mg/kg...milligrams per kilogram

NS...no standard

x...not analyzed at this time

*... Depth from the a basement slab

Shaded values represent concentration exceeding the UUSCO

UUSCO...Unrestricted Use Soil Cleanup Objectives (6 NYC RR Pt.375-6.8)

This Table Lists Only Compounds Detected At Concentrations Exceeding Their Respective Method Detection Limi

**Table 2 (Cont.)
Deep Soil Samples Organic Analytical Results (Hydro Tech)**

Sample Identification	SP-1	SP-2	SP-3	SP-4	SP-5	SP-6	SP-7	SP-13	SP-14	SP-15	UUSCO
Sample Depth	8'-10'	8'-10'	6'-8'	8'-10'	8'-10'	6'-8'	8'-10'	6'-8'	8'-10'	10'-12'	
Sample Date	4/24/2009	4/24/2009	4/27/2009	4/24/2009	4/27/2009	4/24/2009	4/24/2009	8/20/2009	8/20/2009	8/20/2009	
Sample Matrix	Soil										
Units	ug/kg										
Volatile Organic Compounds (µg/kg)											
Acetone	ND	ND	ND	ND	ND	32	ND	ND	ND	ND	50
Ethylbenzene	ND	ND	3,500	ND	16,000	ND	ND	ND	ND	ND	1.0
o-Xylene	ND	ND	ND	ND	1,700	ND	ND	ND	ND	ND	NS
m + p-Xylene	ND	ND	ND	ND	50,000	ND	ND	ND	ND	ND	NS
Isopropylbenzene	ND	ND	2,800	ND	3,800	ND	ND	ND	ND	ND	NS
n-Propylbenzene	ND	ND	6,400	ND	16,000	ND	ND	ND	ND	ND	3,900
1,3,5-Trimethylbenzene	ND	ND	33,000	ND	35,000	ND	ND	ND	ND	ND	8,400
1,2,4-Trimethylbenzene	ND	ND	89,000	ND	93,000	ND	600	ND	ND	ND	3,600
sec-Butylbenzene	ND	ND	1,800	ND	2,800	ND	ND	ND	ND	ND	11,000
4-Isopropyltoluene	ND	ND	2,800	ND	1,500	ND	ND	ND	ND	ND	NS
n-Butylbenzene	ND	ND	5,400	ND	7,200	ND	ND	ND	ND	ND	12,000
Naphthalene	ND	ND	25,000	ND	18,000	ND	ND	ND	ND	ND	NS
Total VOCs	ND	ND	169,700	ND	245,000	32	600	ND	ND	ND	NS
Semi-Volatile Organic Compounds (µg/kg)											
Naphthalene	ND	ND	4,100	ND	28,000	ND	860	ND	ND	ND	12,000
2-Methylnaphthalene	ND	ND	3,200	ND	18,000	ND	690	ND	ND	ND	NS
Phenanthrene	3,700	ND	ND	ND	1,200	ND	ND	ND	ND	ND	100,000
Anthracene	1,100	ND	100,000								
Fluoranthene	4,900	ND	ND	ND	1,200	ND	ND	ND	ND	ND	100,000
Pyrene	5,500	ND	ND	ND	1,300	ND	ND	ND	ND	ND	100,000
Benzo (a) Anthracene	3,100	ND	ND	ND	520	ND	ND	ND	ND	ND	1,000
Chrysene	3,000	ND	ND	ND	480	ND	ND	ND	ND	ND	1,000
Benzo (b) Fluoranthene	3,100	ND	ND	ND	450	ND	ND	ND	ND	ND	1,000
Benzo (k) Fluoranthene	1,300	ND	800								
Benzo (a) Pyrene	2,800	ND	1,000								
Indeno (1,2,3-cd) Pyrene	950	ND	500								
Benzo (g,h,i) Perylene	960	ND	100,000								
Total SVOCs	30,410	ND	7,300	ND	51,150	ND	1,550	ND	ND	ND	NS
Pesticides											
ND											
PCBs											
ND											

NS...No Standard

ND...Not Detected

Shaded values represent concentration exceeding the UUSCO

UUSCO...Unrestricted Use Soil Cleanup Objectives (6 NYC RR Pt.375-6.8)

This Table Lists Only Compounds Detected At Concentrations Exceeding Their Respective Method Detection Limit.

Table 2 (Cont.)
Deep Soil Samples Inorganic Analytical Results (Hydro Tech)

Sample Identification	SP-1	SP-2	SP-3	SP-4	SP-5	SP-6	SP-7	UUSCO
Sample Depth	8'-10'	8'-10'	6'-8'	8'-10'	8'-10'	6'-8'	8'-10'	
Sample Date	4/24/2009	4/24/2009	4/27/2009	4/24/2009	4/27/2009	4/24/2009	4/24/2009	
Sample Matrix	Soil							
Units	mg/Kg	mg/Kg						
Aluminum	12,300	16,800	20,600	5,570	7,040	13,300	10,500	NS
Antimony	5.1	ND	ND	ND	ND	ND	ND	NS
Arsenic	6	ND	ND	ND	ND	ND	1.5	13
Barium	439	171	171	120	56.9	124	121	350
Beryllium	0.63	0.95	0.64	0.43	0.48	0.66	0.48	7.2
Cadmium	0.8	0.37	0.65	ND	82.6	ND	ND	2.5
Calcium	5,440	2,470	3,380	1,510	3,820	1,040	1,870	NS
Total Chromium	48.8	29.2	35.3	19.3	22.6	33.6	30.1	NS
Chromium Hexavalent	x	x	x	x	x	x	x	1
Chromium Trivalent	x	x	x	x	x	x	x	30
Cobalt	17.4	26.3	6.34	8.43	11	17.2	7.84	NS
Copper	298	87.3	7.35	8.7	25.9	42.1	20	50
Iron	30,400	33,500	12,100	7,520	15,600	27,000	16,200	NS
Lead	713	4.38	9.69	1.12	30.4	5.07	8.53	63
Magnesium	6,320	7,640	2,490	2,550	3,580	4,360	3,060	NS
Manganese	336	145	105	73.8	390	496	297	1,600
Mercury	0.1	ND	ND	ND	ND	ND	ND	0.18
Nickel	26	43.8	17.7	19.3	20.6	38.8	24.6	30
Potassium	6,360	9.47	1,160	8.25	1,240	3,590	1,440	NS
Sodium	222	198	121	98.9	203	117	130	NS
Thallium	ND	5.2	ND	ND	ND	ND	ND	NS
Vanadium	56.2	45.5	27.8	13.6	25.7	49.7	27.9	NS
Zinc	487	81.3	53.9	53.7	59.1	47.4	42.4	109

ND...not detected

mg/kg...milligrams per kilogram

NS...no standard

x...not analyzed at this time

Shaded values represent concentration exceeding the UUSCO

UUSCO...Unrestricted Use Soil Cleanup Objectives (6 NYC RR Pt.375-6.8)

This Table Lists Only Compounds Detected At Concentrations Exceeding Their Respective Method Detection Limit.