

PROPOSED REMEDIAL ACTION PLAN

192 Ralph Avenue
Operable Unit Number 02: On-site Remedial Program
State Superfund Project
Brooklyn, Kings County
Site Nos. 224042 & V00669
August 2013



Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

PROPOSED REMEDIAL ACTION PLAN

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Brooklyn, Kings County
Site Nos. 224042 & V00669
August 2013

SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the above referenced site. The disposal of hazardous wastes at the site resulted in threats to public health and the environment that were addressed by actions known as interim remedial measures (IRMs), which were undertaken at the site. An IRM is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the remedial investigation (RI) or feasibility study (FS). The IRMs undertaken at this site are discussed in Section 6.2.

Based on the implementation of the IRM(s), the findings of the RI indicate that the site no longer poses a threat to human health or the environment. The IRM(s) conducted at the site attained the remediation objectives identified for this site, which are presented in Section 6.5, for the protection of public health and the environment. No Further Action is the remedy proposed by this Proposed Remedial Action Plan (PRAP). A No Further Action remedy may include site management, which will include continued operation of any remedial system installed during the IRM and the implementation of any prescribed institutional controls/engineering controls (ICs/ECs) that have been identified as being part of the proposed remedy for the site. This PRAP identifies the IRM(s) conducted and discusses the basis for No Further Action.

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375. This document is a summary of the information that can be found in the site-related reports and documents in the document repository identified below.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all PRAPs. This is an opportunity for public participation in the remedy selection process. The public is encouraged to review the

reports and documents, which are available at the following repository:

Saratoga Library
8 Thomas S. Boyland St
Brooklyn, NY 11233
Phone: 718-573-5224

A public comment period has been set from:

August 30, 2013 to September 30, 2013

A public meeting is scheduled for the following date:

September 17, 2013 at 6:00 p.m.

Public meeting location:

P.S. 005 Ronald McNair School Auditorium
820 Hancock St.
Brooklyn

At the meeting, the findings of the remedial investigation (RI) will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP.

Written comments may also be sent through to:

Robert Filkins
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
rhfilkin@gw.dec.state.ny.us

The Department may modify the proposed remedy presented in this PRAP based on new information or public comments. Therefore, the public is encouraged to review and comment on the proposed remedy identified herein. Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email

listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at <http://www.dec.ny.gov/chemical/61092.html>

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The site is located in an urban area in the southeastern part of the Bedford Stuyvesant section of Brooklyn. The site occupies 188 through 192 Ralph Avenue and is identified on the New York City Tax Map as Section 6, Block 1678, Lot 53.

Site Features: The main site feature is the existing three-story building on the property and an attached one-story addition with a basement at the rear (192 Ralph Avenue). The building structure is 20' x 80' occupying an area of approximately 0.037 acres.

Current Zoning/Use: The building at the site is zoned mixed Residential and Commercial (R6B) and is currently unoccupied. The surrounding properties are either zoned the same or as Residential 1 and 2 Family (primarily row house structures), which make up the majority of the area property uses. The row house property adjacent to the site building at 590 MacDonough Street has this latter zoning designation, while the adjacent 4-story, 14-unit apartment building to the south at 196 Ralph Avenue has the residential and commercial designation.

Past Use of the Site: Dry-cleaning operations (wet chemical) were conducted at the site from approximately 1946 until 1998. From 1998 until 2000 the site was used solely as a drop-shop dry-cleaning operation. The dry-cleaning operations took place in the 18 x 20 foot addition at the rear of the building with the equipment located on the first floor. It appears that the site contamination came from releases of process chemicals into the basement area of the one-story building addition, which at the time had a dirt floor in the basement allowing migration of contaminants into the underlying soils and groundwater.

Site contamination was discovered in 2002 during an owner-initiated subsurface investigation within the basement area of the building. With the confirmation of waste disposal at the site the property owner entered the Department's Voluntary Cleanup Program (VCP) as a Volunteer in 2004. The VCP site is defined as the entire 80' x 20' parcel. The State Superfund site is a 20' x 20' area at the southern end of the parcel.

Operable Units: The site was divided into two operable units. An operable unit represents a portion of a remedial program for a site that for technical or administrative reasons can be addressed separately to investigate, eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination. Operable Unit 2 (OU2) is the on-site source area. OU1 consists of the off-site groundwater and soil vapor plumes.

Site Geology and Hydrogeology: The general area geology is composed of outwash sand and gravel deposits. Locally, there are highly permeable fine to medium sands with some gravel. There appears to be a confining silt/clay layer of unknown thickness present in the site area

around 60 to 70 feet below the ground surface. Groundwater is encountered at 35 to 40 feet below ground surface (~9 feet above sea level). The area groundwater flow is to the south/southeast.

Operable Unit (OU) Number 02 is the subject of this document.

A Record of Decision will be issued for OU 01 in the future.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to restricted-residential use (which allows for commercial use and industrial use) as described in Part 375-1.8(g) is/are being evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the investigation to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

No PRPs have been documented to date.

The Department and Brooklyn Properties 5, LLC (Volunteer), entered into a Voluntary Cleanup Agreement (VCA) on February 20, 2004. The agreement was amended on January 12, 2012 to add Hubbell Mountain, LLC as an additional Volunteer to the VCA. The agreement obligates the parties to implement a full remedial program for the site. The Volunteers are subject to legal actions by the state for recovery of all on-site response costs the state has incurred.

The off-site portion of the site investigation is beyond the scope of the on-site VCA and is being investigated under the State Superfund as Operable Unit 1.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A Remedial Investigation (RI) has been conducted. The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the RI Report.

The following general activities are conducted during an RI:

- Research of historical information,
- Geophysical survey to determine the lateral extent of wastes,
- Test pits, soil borings, and monitoring well installations,
- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- groundwater
- soil
- soil vapor
- indoor air

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: <http://www.dec.ny.gov/regulations/61794.html>

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a hazardous waste that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified for this Operable Unit at this site is/are:

TETRACHLOROETHYLENE (PCE)

Based on the investigation results, comparison to the SCGs, and the potential public health and environmental exposure routes, certain media and areas of the site required remediation. These media were addressed by the IRM(s) described in Section 6.2. More complete information can be found in the RI Report and the IRM Construction Completion Report.

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

The following IRM(s) has/have been completed at this site based on conditions observed during the RI.

IRM Soil Vapor Extraction

The Interim Remedial Measure Work Plan dated June 2007 was approved July 11, 2007. The approved IRM Work Plan consists of the installation of a soil vapor extraction (SVE) system beneath the former dry-cleaners and adjacent management office to remediate volatile organic compounds (VOCs) sub-slab soil contamination and minimize vapor intrusion into the on-site building. Concurrent with the installation of the SVE system, a new concrete floor and a vapor barrier was installed in the basement of the former dry-cleaner (formerly a dirt floor) to further minimize the potential for vapor intrusion. The approved IRM work plan has been implemented, and the installed SVE system is currently operational. The remediation goal of the SVE IRM is to meet protection of groundwater cleanup objective (SCO) for PCE of 1.3 ppm. This would also meet the restricted residential SCO.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for OU 02.

Nature and Extent of Contamination: Based upon investigations conducted to date the primary contaminant of concern at the site is the dry cleaning solvent tetrachloroethylene (also known as perchloroethylene, perc or PCE).

Chemical concentrations are reported in parts per billion (ppb) for water, soil samples are reported in parts per million (ppm) while air samples are reported in micrograms per cubic meter (ug/m3).

Soil Contamination: The significant soil contamination at the site is primarily limited to the area under the building footprint. The shallow soils are contaminated with PCE in the range of 10 to 344 ppm. The restricted residential soil cleanup objective (SCO) for PCE is 19 ppm.

Groundwater Contamination: Groundwater beneath the building footprint is contaminated with PCE above groundwater standard of 5 ppb. PCE has also migrated from the site area down-gradient to the south southeast under the adjoining sidewalks and streets. PCE contamination in the upper part of the aquifer (~ 40 feet below ground surface) ranges from approximately 2.4 to 320 ppb in the vicinity of the site in February, 2013.

Soil Vapor: Soil vapor measurements taken from the five extraction wells in the basement of the building showed PCE concentrations ranged from 678 to 19,000 ug/m³ during the latest monitoring event.

Indoor Air: A post-IRM indoor air sample in the southern 20'x 20' portion of the parcel defined as the State Superfund site showed PCE at a concentration of 6.98 ug/m³. Three post-IRM indoor air samples were taken in the remainder of the parcel and contained a maximum PCE concentration of 6.71 ug/m³.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure*.

People will not come into contact with contaminated soils since they are located at depth and beneath a building foundation. Contaminated groundwater at the site is not used for drinking or other purposes and the site is served by a public water supply that obtains water from a different source not affected by this contamination. Volatile organic compounds in groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. A soil vapor extraction system has been installed beneath the on-site building to prevent the indoor air quality from being affected by the contamination in soil vapor beneath the building. The potential for off-site inhalation exposures due to soil vapor intrusion is being investigated as part of a separate investigation (Operable Unit 1).

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

RAOs for Environmental Protection

- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

Soil Vapor

RAOs for Public Health Protection

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

SECTION 7: SUMMARY OF PROPOSED REMEDY

Based on the results of the investigations at the site, the IRM that has been performed, and the evaluation presented here, the Department is proposing No Further Action as the remedy for the site. This No Further Action remedy includes continued operation of the SVE/SSDS system, a deed restriction, and the maintenance of the existing site cover (ICs/ECs) as the proposed remedy for the site. The Department believes that this remedy is protective of human health and the environment and satisfies the remediation objectives described in Section 6.5. The elements of the IRM already completed and the institutional and engineering controls are listed below:

1. Continued operation, maintenance and monitoring of the Soil Vapor Extraction System (SVE), new concrete floor and vapor barrier installed as part of the Interim Remedial Measure (IRM).
2. A site cover currently exists and will be maintained to allow for restricted residential use of the site. Any site redevelopment will maintain a site cover, which may consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a soil cover is required it will be a minimum of two feet of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted residential use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).
3. Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8(h)(3);
- allows the use and development of the controlled property for restricted residential, commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH;
- requires compliance with the Department approved Site Management Plan.

4. A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 3 above.

Engineering Controls: The site cover discussed in Paragraph 2, a vapor barrier, and the soil vapor extraction system discussed in Paragraph 1 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use, and/or groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion should the on-site building become occupied and for any buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;
- monitoring for vapor intrusion for any buildings re-occupied or developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

- compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation for all environmental media that were evaluated. As described in Section 6.1, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are volatile organic compounds (VOCs). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil the Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented. See Figure 2 for the location of sampling points.

Groundwater

Post-IRM groundwater samples were collected from overburden monitoring wells near the site. The samples were collected to assess groundwater conditions on and adjacent to the site. The results indicate that contamination in groundwater at the site exceeds the SCGs for volatile organic compounds at shallow and intermediate depths. Additional off-site volatile organic compound groundwater contamination has been detected further downgradient of the site. In the vicinity of the site, overburden groundwater flows to the southeast. The depth to groundwater is approximately 37 feet. See Figure 4. That further off-site contamination is being investigated separately and will be the subject of separate PRAP/ROD at a later date. The area is supplied by public water with no water supply wells in the vicinity.

Table 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb) ^a	SCG ^b (ppb)	Frequency Exceeding SCG
VOCs			
Tetrachloroethene	ND – 320	5	3 of 7
Trichloroethene	ND – 6.5	5	1 of 7
Cis-1,2-dichloroethene	ND – 6.0	5	1 of 7

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.

b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

Groundwater contamination identified during the RI will be addressed during a separate investigation.

Soil

Subsurface soil samples were collected at the site during the RI. Prior to the soil vapor extraction IRM subsurface soil samples were collected from a depth of 1 - 30 feet to assess soil contamination impacts to

groundwater. The results indicate that soils at the site exceed the unrestricted SCG for volatile organics, specifically tetrachloroethene. The restricted use SCG for tetrachloroethene was exceeded to a lesser extent.

Table 2 - Soil

Detected Constituents	Concentration Range Detected (ppm) ^a	Unrestricted SCG ^b (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG ^c (ppm)	Frequency Exceeding Restricted SCG
VOCs					
Tetrachloroethene	ND - 344	1.3	5 of 24	19	4 of 24

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;

b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.

c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Commercial Use, unless otherwise noted.

Soil contamination identified during the RI was addressed during the IRM described in Section 6.2.

Soil Vapor

The evaluation of the potential for soil vapor intrusion resulting from the presence of site related soil or groundwater contamination was evaluated by the sampling of soil vapor and indoor air inside structures. At this site due to the presence of buildings in the impacted area a full suite of samples were collected to evaluate whether soil vapor intrusion was occurring.

Soil vapor samples were collected from the five sub-slab vapor extraction wells in the basement of the dry cleaner building. Additional soil vapor samples were taken from beneath the Ralph Avenue sidewalks to the east and an adjacent building to the south. Indoor air and outdoor air samples from the former dry cleaner and adjacent properties were also collected at this time. (See Figure 3) The samples were collected to assess the potential for soil vapor intrusion. The results indicate tetrachloroethene (PCE) was detected at elevated levels in the vapor extraction wells with much lower levels beneath the sidewalks and the adjacent building's slab, and the pre-IRM concentrations in indoor air were lower than the background outdoor air (sample OA-1), which was collected off-site on an adjacent properties back yard. This elevated off-site detection in outdoor air will be investigated further in the off-site investigation currently underway.

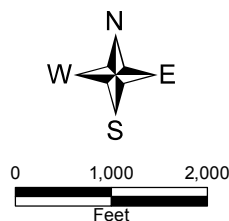
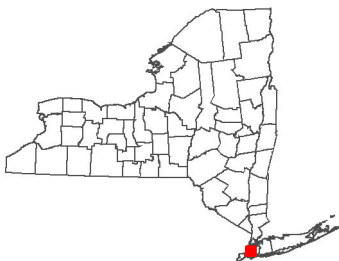
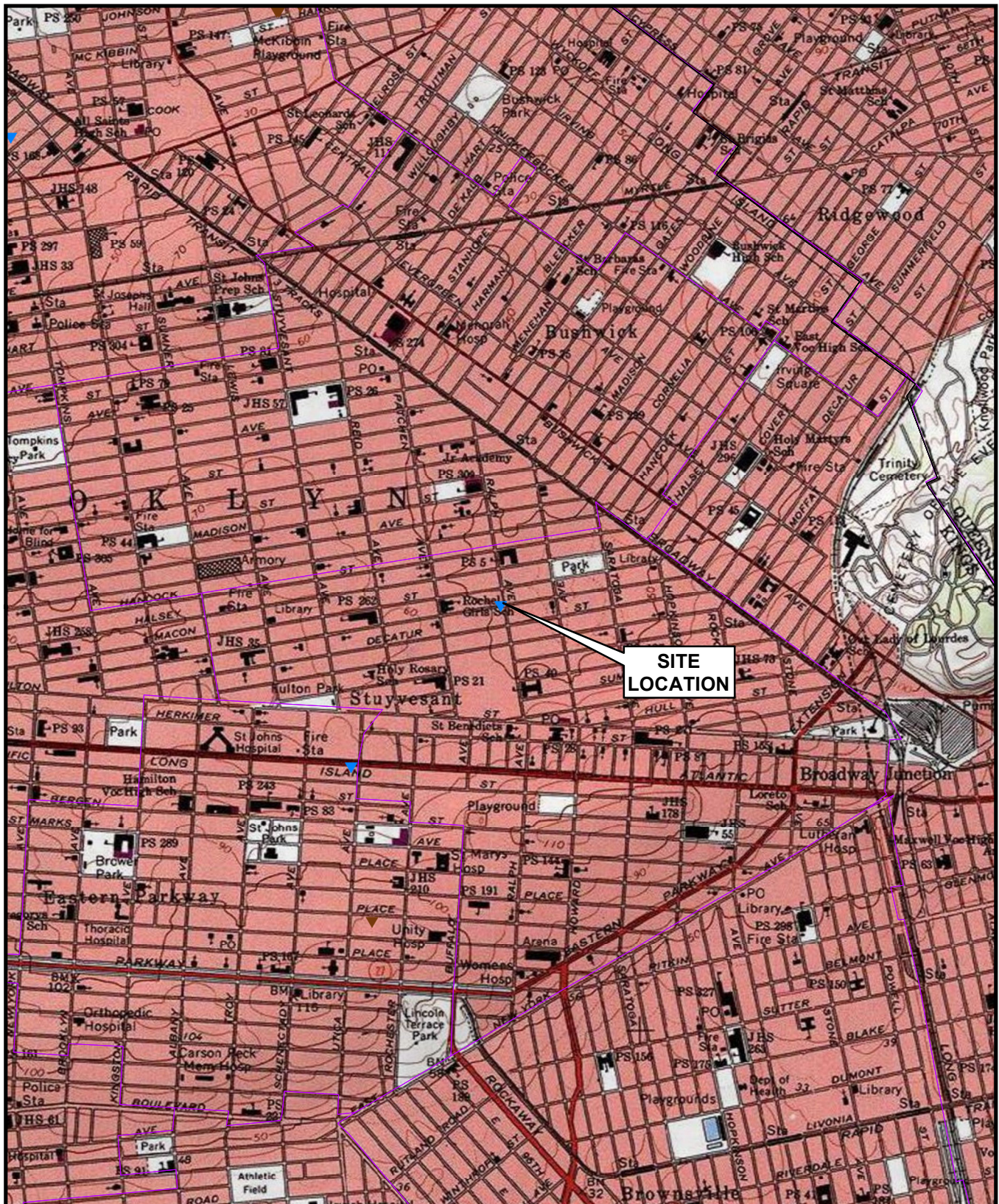


Figure 1
Site Location Map
 192 Ralph Avenue
 Brooklyn, Kings County
 Site No. V00669



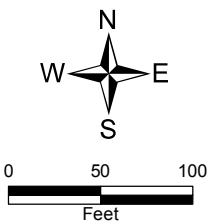
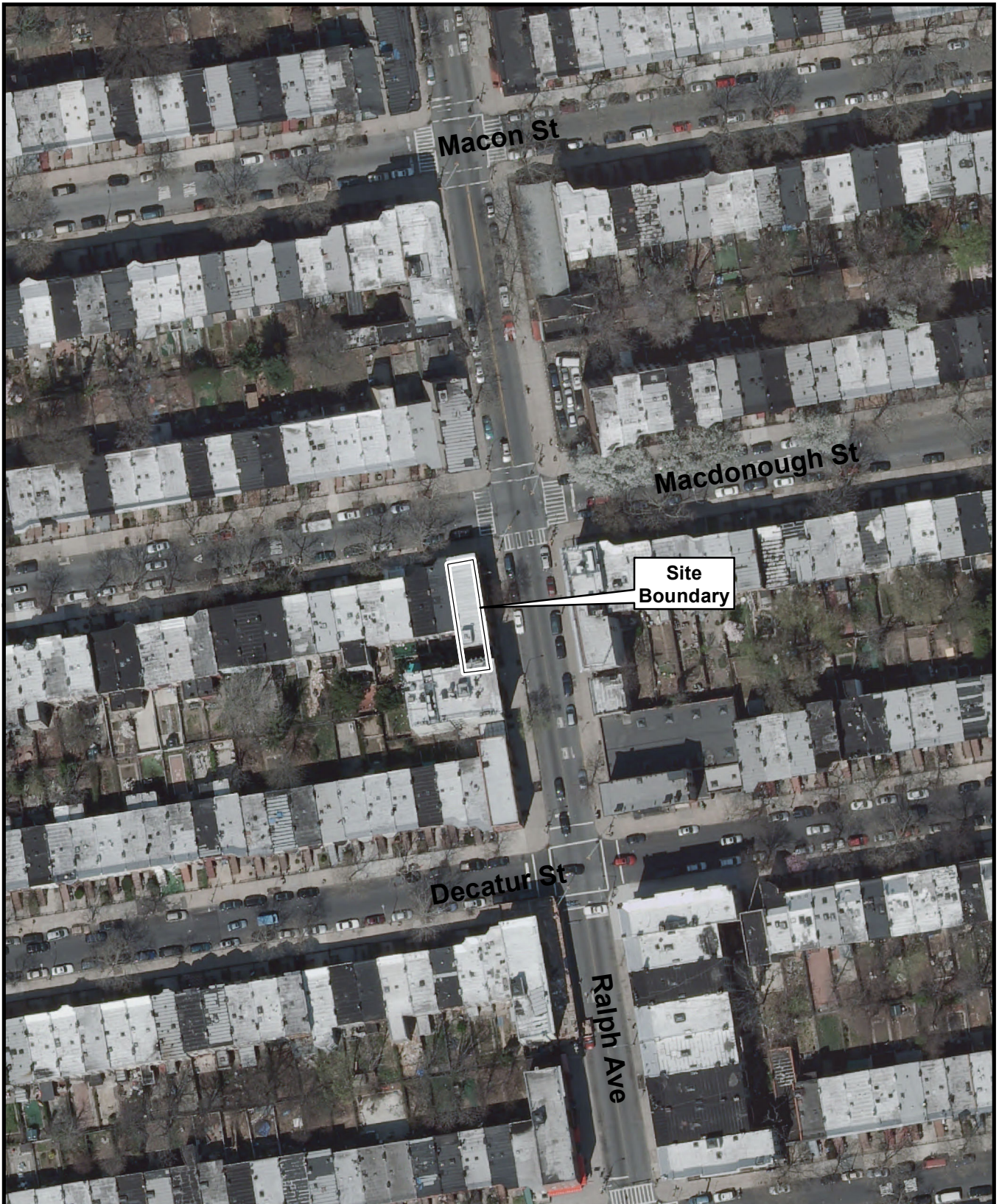


Figure 1A
Site Map
192 Ralph Avenue
Brooklyn, Kings County
Site No. V00669



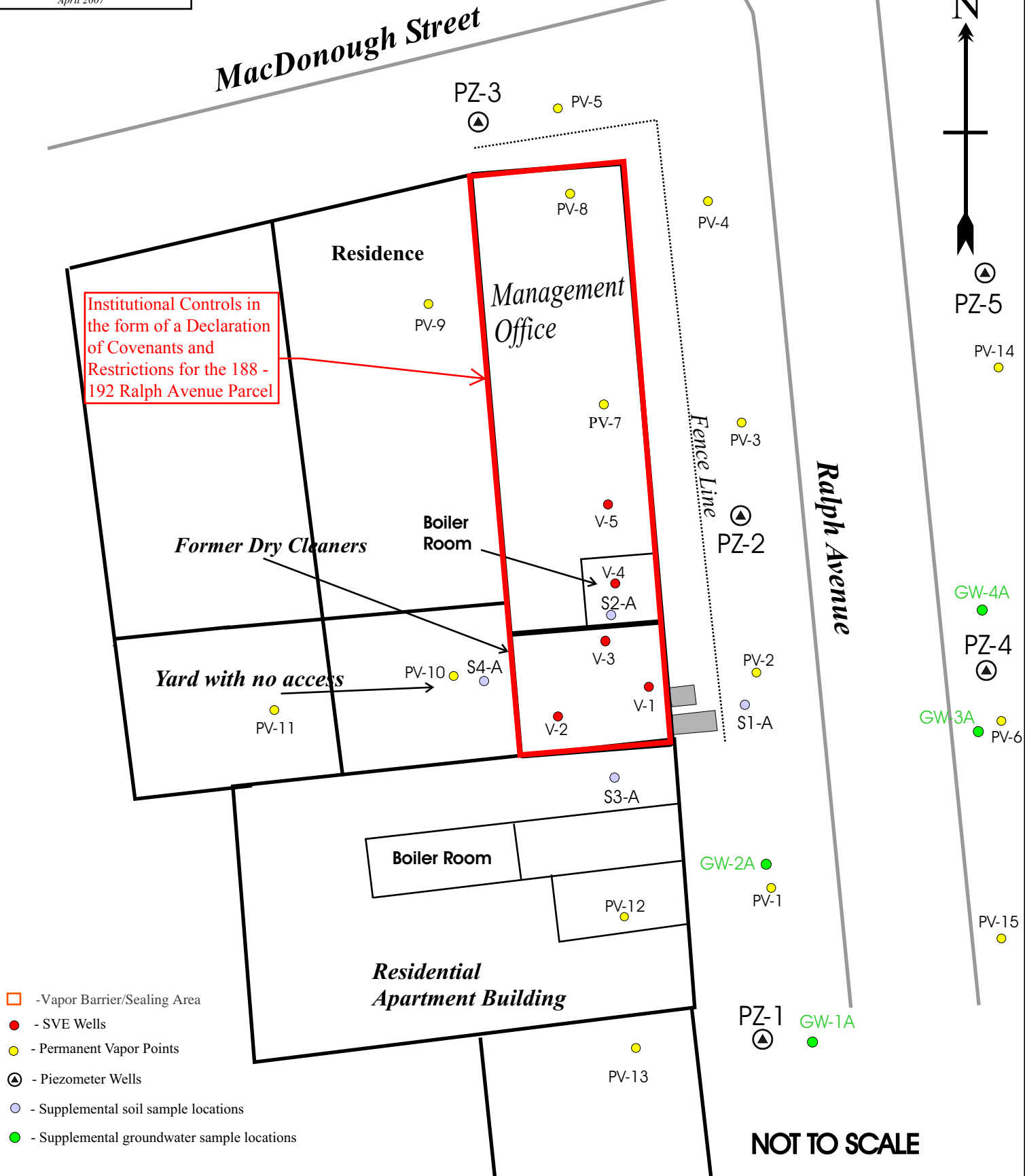


Figure 2 - Soil Vapor Extraction (SVE) Well Locations and Basement Area of Vapor Barrier/Sealing

**188-192 Ralph Avenue
Brooklyn, New York
Site No. V-00669-2
Index No.: W2-0977-03-11**

Revised By: JGH 7/31/10



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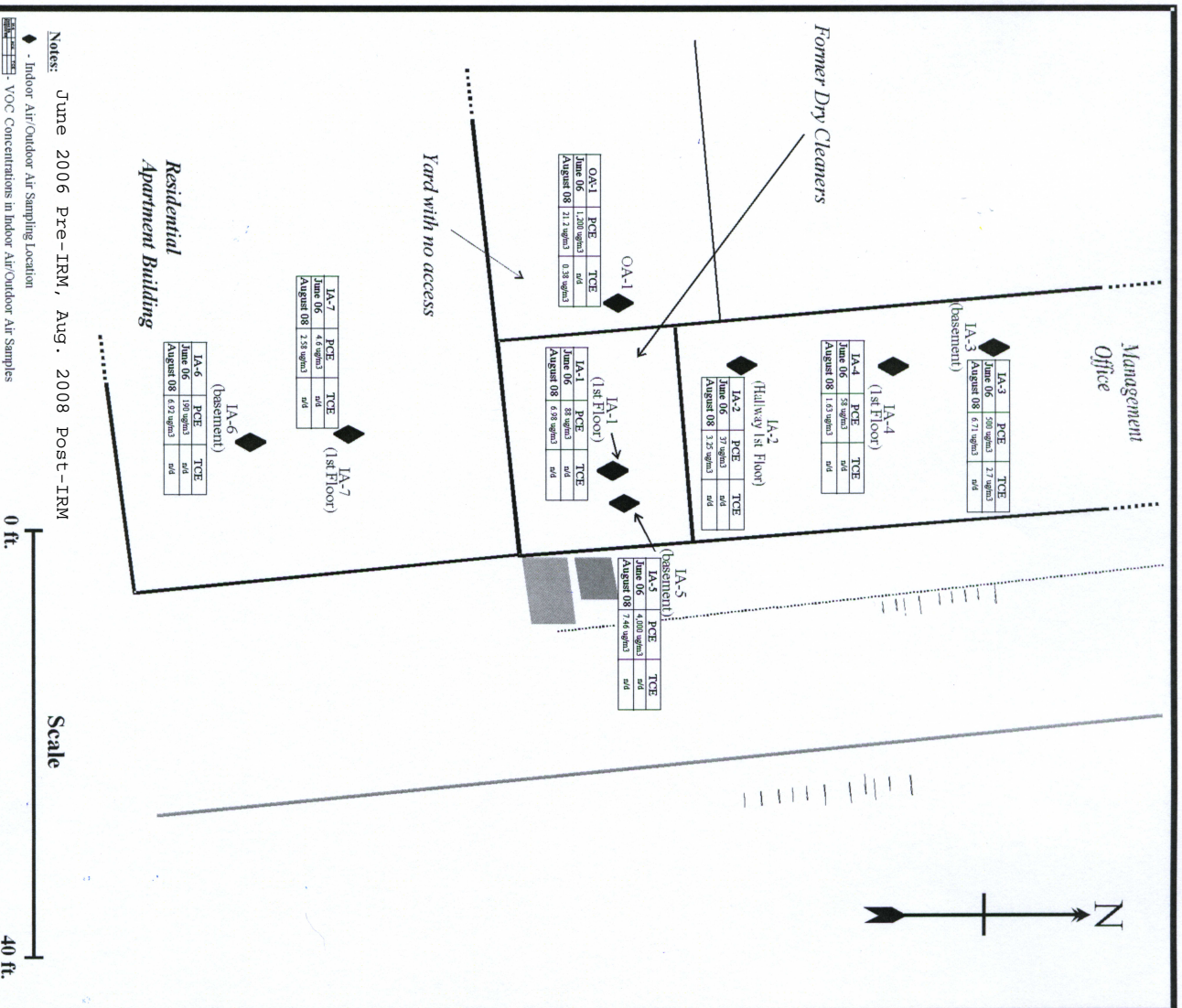
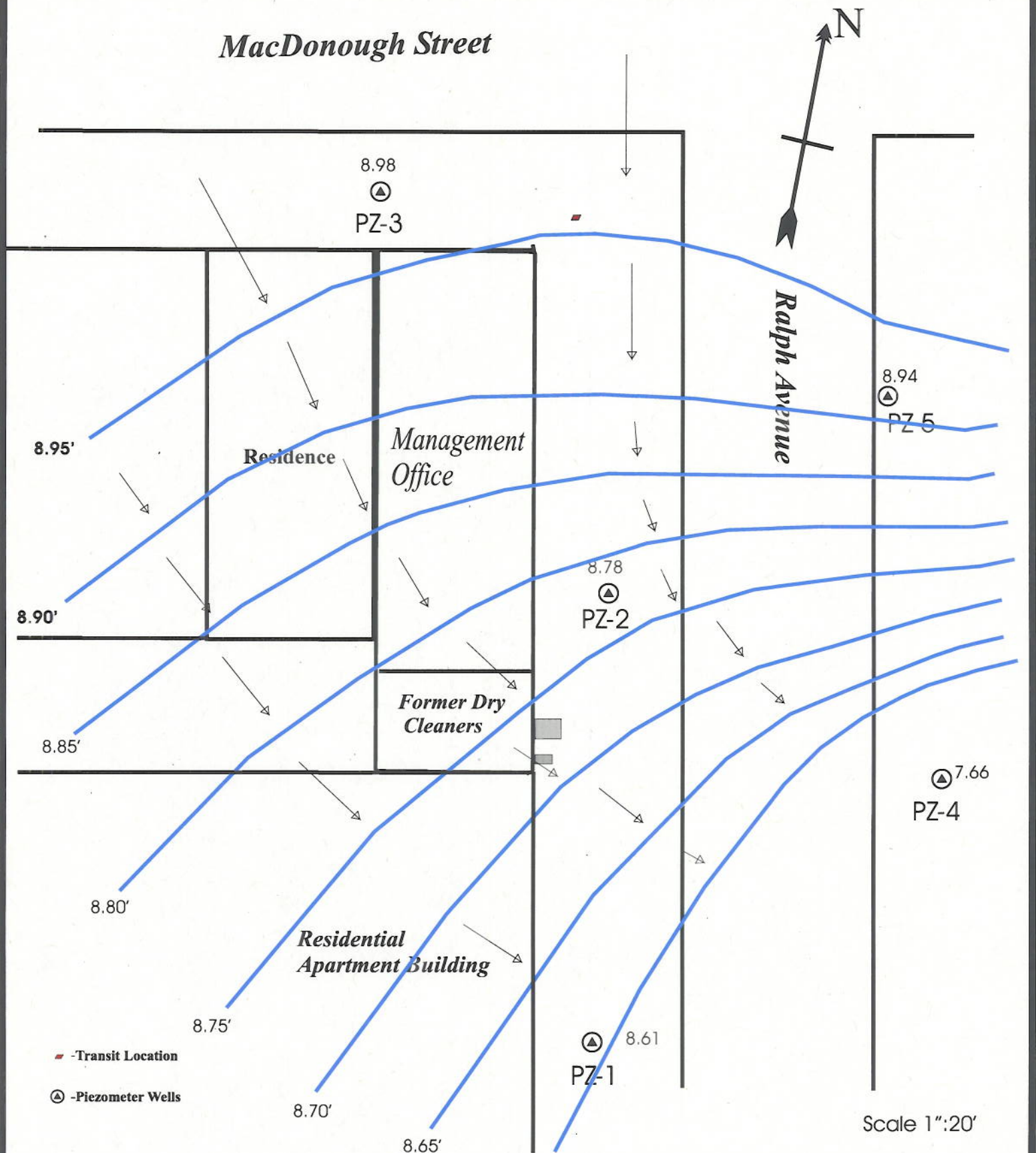


Figure-3
Indoor Air Quality
Comparison of June 2006
and August 2008
Air Samples

188-192 Ralph Avenue
Brooklyn, New York
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MacDonough Street



Groundwater Elevation Survey

Well	MW Case-Elevation	DTW 1/2/08	WT Elevation 1/2/08
PZ-1	45.53	36.87	8.61
PZ-2	45.77	36.95	8.78
PZ-3	46.41	37.37	8.98
PZ-4	45.60	37.94	7.66
PZ-5	45.69	36.65	8.94

Elevation In Feet
 Start Elevation: 45.92'
 Source: USGS Seamless Server
 South West Corner MacDonough St. & Ralph Ave.

188-192 Ralph Avenue
 Brooklyn, New York
 Site No. V-00669-2
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 Figure-4



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