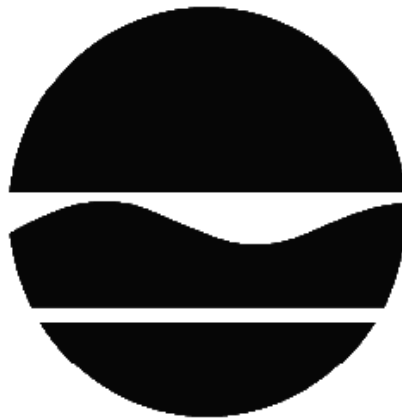


DECISION DOCUMENT

388 Carroll Street and 363 Bond Street
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224173
March 2015



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

DECLARATION STATEMENT - DECISION DOCUMENT

388 Carroll Street and 363 Bond Street
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224173
March 2015

Statement of Purpose and Basis

This document presents the remedy for the 388 Carroll Street and 363 Bond Street site, a brownfield cleanup site. The remedial program was chosen in accordance with the 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 decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the 388 Carroll Street and 363 Bond Street site and the public's input to the proposed remedy presented by the Department.

Description of Selected Remedy

The elements of the selected remedy are as follows:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Excavation

Excavation and off-site disposal of contaminant source areas, including weathered petroleum contaminated soil to a depth of two feet below the water table which ranges five to eight feet below ground surface. Approximately 5,500 cubic yards of soil will be removed from the site.

On-site soil which does not exceed soil cleanup objectives (SCOs) for restricted residential use of the site, and the applicable protection of groundwater SCOs, may be used to backfill the excavation to the extent that a sufficient volume of on-site soil is available and placed below the cover system described in Paragraph 3.

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to complete the backfilling of the excavation and establish the designed grades at the site.

3. Site Cover

A site cover will be required to allow for restricted residential use of the site. The cover will 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 SCOs. Where the 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).

4. Vapor Mitigation

Any future on-site buildings will be required to have an active sub-slab depressurization system, or a similar engineered system, to prevent the migration of vapors into the building from soil and groundwater.

5. Contingent Groundwater Remedy

A multi-phase extraction system and an air sparging/soil vapor extraction system will be installed. If, based on post-excavation sampling it is determined that they are needed, these systems will treat groundwater contamination and ensure contaminated groundwater does not migrate off-site. These groundwater treatment systems will be designed and installed so that the capture zone is sufficient to cover the extent of groundwater contamination and may be enhanced via biosparging and/or injection of a biological nutrient such as an oxygen release compound.

Air sparging will be implemented to address the groundwater plume contaminated by volatile organic compounds (VOCs). VOCs will be physically removed from the groundwater and soil below the water table (saturated soil) by injecting air into the subsurface. As the injected air rises through the groundwater, the VOCs volatilize and transfer from the groundwater and/or soil into the injected air. The VOCs are carried with the injected air into the vadose zone (the area below the ground surface but above the water table) where a soil vapor extraction (SVE) system is used

to remove the injected air. The SVE system applies a vacuum to wells that have been installed into the vadose zone to remove the VOCs along with the air introduced by the sparging process. The air extracted from the SVE wells is then treated as necessary prior to being discharged to the atmosphere.

The operation of these systems are contingent on the success of remedy; post-remediation groundwater monitoring data will be evaluated by the Department to determine if the removal of source material was sufficient to make operation of these systems unnecessary.

6. Institutional Control

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 NYCDOH; and
- requires compliance with the Department approved Site Management Plan.

7. Site Management Plan

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 6 above.

Engineering Controls: The site cover discussed in Paragraph 3, the sub-slab depressurization or similar engineered systems discussed in Paragraph 4 and the contingent groundwater remedy discussed in Paragraph 5 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 groundwater use restrictions;
- 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 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; and
 - a schedule of monitoring and frequency of submittals to the Department.
- 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.

Declaration

The remedy conforms with promulgated standards and criteria that are directly applicable, or that are relevant and appropriate and takes into consideration Department guidance, as appropriate. The remedy is protective of public health and the environment.

3/12/15

for RC

Date

Robert Cozzy, Director
Remedial Bureau B

DECISION DOCUMENT

388 Carroll Street and 363 Bond Street
Brooklyn, Kings County
Site No. C224173
March 2015

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of contaminants at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of contaminants at this site, as more fully described in this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum.

The New York State Brownfield Cleanup Program (BCP) is a voluntary program. The goal of the BCP is to enhance private-sector cleanups of brownfields and to reduce development pressure on "greenfields." A brownfield site is real property, the redevelopment or reuse of which may be complicated by the presence or potential presence of a contaminant.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repositories:

Brooklyn Public Library
Attn: Mr. John Leighton
Carroll Gardens Branch
396 Clinton Street
Brooklyn, NY 11231
Phone: (718) 596-6972

Brooklyn Community Board 6
Attn: Mr. Craig Hammerman
250 Baltic Street

Brooklyn, NY 11201-6401
Phone: (718) 643-3027

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: This site is made up of two adjacent parcels, one located at 388 Carroll Street and one located at 363 Bond Street in Brooklyn, NY. The eastern edge of the site borders the Gowanus Canal.

Site Features: A portion of the site contained a one- and two-story light industrial building and another portion is improved with a two-story residential building. Four decommissioned above ground storage tanks (ranging from 5,000 to 10,000 gallon capacity) also existed on the property. All buildings and structures were demolished in 2014 to facilitate remediation of the site. The area of the two parcels that make up the site is approximately 1.35 acres.

Current Zoning and Land Use: The site is currently vacant. The site is current zoned MX-11 which is a mixed use district that allows residential, commercial, and industrial uses. The site is bounded to the north by a City of New York EMS station, to the east by the Gowanus Canal, to the south an active redevelopment site, and to the west by a three-story mixed-use commercial and residential building and a six-story residential building.

Past Use of the Site: Portions of this site have historically been used as paint manufacturer (1915), an oil terminal (1916 – 1950), and a warehouse (1950 – 1986). Other recorded uses of the site include an automobile storage and repair facility and a lumber company.

Site Geology and Hydrogeology: The site is underlain by an approximately 6-to-17 foot thick layer of miscellaneous fill which is underlain by a clay layer. Groundwater was generally observed at depths ranging from five to eight feet below ground surface. Groundwater flow is generally to the east but is affected by the tidal influence from the Gowanus Canal.

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) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the Remedial Investigation (RI) to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is available in the RI Report.

SECTION 5: ENFORCEMENT STATUS

The Applicant(s) under the Brownfield Cleanup Agreement is a/are Volunteer(s). The Applicant(s) does/do not have an obligation to address off-site contamination. However, the Department has determined that this site does not pose a significant threat to public health or the environment; accordingly, no enforcement actions are necessary.

Off-site petroleum-related contamination will be addressed under the Department's Petroleum Spill Response program.

In August 2014, the Volunteer signed a Settlement Agreement and Order on Consent with the United States Environmental Protection Agency (USEPA). This Consent Order calls for the installation of a new sealed steel sheet pile bulkhead, along the property boundary between the site and the Gowanus Canal, to control or eliminate potential impacts to the Canal and to permit dredging to the depths specified by USEPA. The USEPA Consent Order is unrelated to the Brownfield Cleanup Agreement, but as a Volunteer under the BCP, the Applicant has an obligation, to the extent feasible, to prevent the further migration of the on-site groundwater plume. As a result, the bulkhead work will have positive benefit relative to meeting this obligation and preventing off-site contaminant migration.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A remedial investigation (RI) serves as the mechanism for collecting data to:

- characterize site conditions;
- determine the nature of the contamination; and
- assess risk to human health and the environment.

The RI is intended to identify the nature (or type) of contamination which may be present at a site and the extent of that contamination in the environment on the site, or leaving the site. The RI reports on data gathered to determine if the soil, groundwater, soil vapor, indoor air, surface water or sediments may have been contaminated. Monitoring wells are installed to assess groundwater and soil borings or test pits are installed to sample soil and/or waste(s) identified. If other natural resources are present, such as surface water bodies or wetlands, the water and sediment may be sampled as well. Based on the presence of contaminants in soil and groundwater, soil vapor will also be sampled for the presence of contamination. Data collected

in the RI influence the development of remedial alternatives. The RI report is available for review in the site document repository and the results are summarized in section 6.3.

The analytical data collected on this site includes data for:

- groundwater
- soil
- soil vapor

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. 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 contaminant 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 below. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

NAPHTHALENE	BENZO(B)FLUORANTHENE
XYLENE (MIXED)	TETRACHLOROETHYLENE (PCE)
1,2,4-TRIMETHYLBENZENE	TRICHLOROETHENE (TCE)
BENZO(A)ANTHRACENE	TOLUENE
BENZO(A)PYRENE	

The contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- soil

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 Decision Document.

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

IRM (Petroleum Remediation)

This IRM began in April 2014 with the extraction of light non-aqueous phase liquid (LNAPL). Upon completion of this part of the IRM, approximately 185 gallons were removed and properly disposed off-site. Two 1000-gallon aboveground storage tanks (ASTs) and associated impacted soil were also removed in 2014.

Starting in late January 2015, the IRM continued with the excavation and proper disposal of petroleum-contaminated soil source areas (four source areas totaling approximately 3,600 cubic yards on 363 Bond Street and two source areas totaling approximately 1,900 cubic yards on 388 Carroll Street). The objective of this IRM is to remove all soil with concentrations above restricted residential and applicable protection of groundwater SCOs.

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. The RI report presents a detailed discussion of any existing and potential impacts from the site to fish and wildlife receptors.

Soil and groundwater were analyzed for VOCs, SVOCs, metals and PCB/pesticides. Based upon investigations conducted to date, the primary contaminants of concern for this site include PAHs (naphthalene, benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluorathene, 1,2,4 - trimethylbenzene, toluene, and xylene) and VOCs (trichloroethene - TCE and tetrachloroethylene - PCE).

Soil - The identified contaminants were the only ones that exceeded restricted residential soil cleanup objectives (SCOs). The concentrations of the individual PAHs exceed the restricted residential SCOs for each with a maximum concentration of 62 ppm for benzo(a)anthracene, 61 ppm for benzo(a)pyrene, and 38 ppm for benzo(b)fluorathene. Site-related soil contamination is not expected to extend off-site based on the available data.

Groundwater – The identified contaminants were the only ones that exceeded groundwater standards. Naphthalene is found in groundwater at the west end of the site, greatly exceeding groundwater standard (10 ppb), with a maximum concentration of 43,700 ppb. Site-wide levels of 1,2,4 - trimethylbenzene (6,000 ppb), xylene (3,200 ppb), and toluene (1,800 ppb) also exceed groundwater standards (maximum concentrations in parentheses). If, based on post-excavation sampling it is determined that groundwater treatment systems are needed, these systems will ensure contaminated groundwater is remediated and does not migrate off-site

Soil Vapor - TCE and PCE was detected in on-site soil vapor at elevated concentrations up to 56,000 and 4,160 micrograms per cubic meter, respectively.

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 are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. People who dig below the ground surface may come into contact with contaminants in subsurface soil. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the 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. The potential exists for people to inhale site contaminants in indoor air due to soil vapor intrusion in any on-site buildings that may be constructed and occupied in the future. Additional sampling is needed to determine whether soil vapor intrusion is a concern for off-site structures.

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 ingestion of groundwater with contaminant levels exceeding drinking water standards.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

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: ELEMENTS OF THE SELECTED REMEDY

The alternatives developed for the site and the evaluation of the remedial criteria are presented in the Alternative Analysis. The remedy is selected pursuant to the remedy selection criteria set forth in DER-10, Technical Guidance for Site Investigation and Remediation and 6 NYCRR Part 375.

The selected remedy is a Track 4: Restricted use with site-specific soil cleanup objectives remedy.

The selected remedy is referred to as the soil excavation with cover system remedy.

The elements of the selected remedy, as shown in Figures 2A and 2B, are as follows:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Excavation

Excavation and off-site disposal of contaminant source areas, including weathered petroleum contaminated soil to a depth of two feet below the water table which ranges five to eight feet below ground surface. Approximately 5,500 cubic yards of soil will be removed from the site.

On-site soil which does not exceed soil cleanup objectives (SCOs) for restricted residential use of the site, and the applicable protection of groundwater SCOs, may be used to backfill the excavation to the extent that a sufficient volume of on-site soil is available and placed below the cover system described in Paragraph 3.

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to complete the backfilling of the excavation and establish the designed grades at the site.

3. Site Cover

A site cover will be required to allow for restricted residential use of the site. The cover will 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 SCOs. Where the 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).

4. Vapor Mitigation

Any future on-site buildings will be required to have an active sub-slab depressurization system, or a similar engineered system, to prevent the migration of vapors into the building from soil and groundwater.

5. Contingent Groundwater Remedy

A multi-phase extraction system and an air sparging/soil vapor extraction system will be installed. If, based on post-excavation sampling it is determined that they are needed, these systems will treat groundwater contamination and ensure contaminated groundwater does not migrate off-site. These groundwater treatment systems will be designed and installed so that the capture zone is sufficient to cover the extent of groundwater contamination and may be enhanced via biosparging and/or injection of a biological nutrient such as an oxygen release compound.

Air sparging will be implemented to address the groundwater plume contaminated by volatile organic compounds (VOCs). VOCs will be physically removed from the groundwater and soil below the water table (saturated soil) by injecting air into the subsurface. As the injected air rises through the groundwater, the VOCs volatilize and transfer from the groundwater and/or soil into the injected air. The VOCs are carried with the injected air into the vadose zone (the area below

the ground surface but above the water table) where a soil vapor extraction (SVE) system is used to remove the injected air. The SVE system applies a vacuum to wells that have been installed into the vadose zone to remove the VOCs along with the air introduced by the sparging process. The air extracted from the SVE wells is then treated as necessary prior to being discharged to the atmosphere.

The operation of these systems are contingent on the success of remedy; post-remediation groundwater monitoring data will be evaluated by the Department to determine if the removal of source material was sufficient to make operation of these systems unnecessary.

6. Institutional Control

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 NYCDOH; and
- requires compliance with the Department approved Site Management Plan.

7. Site Management Plan

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:

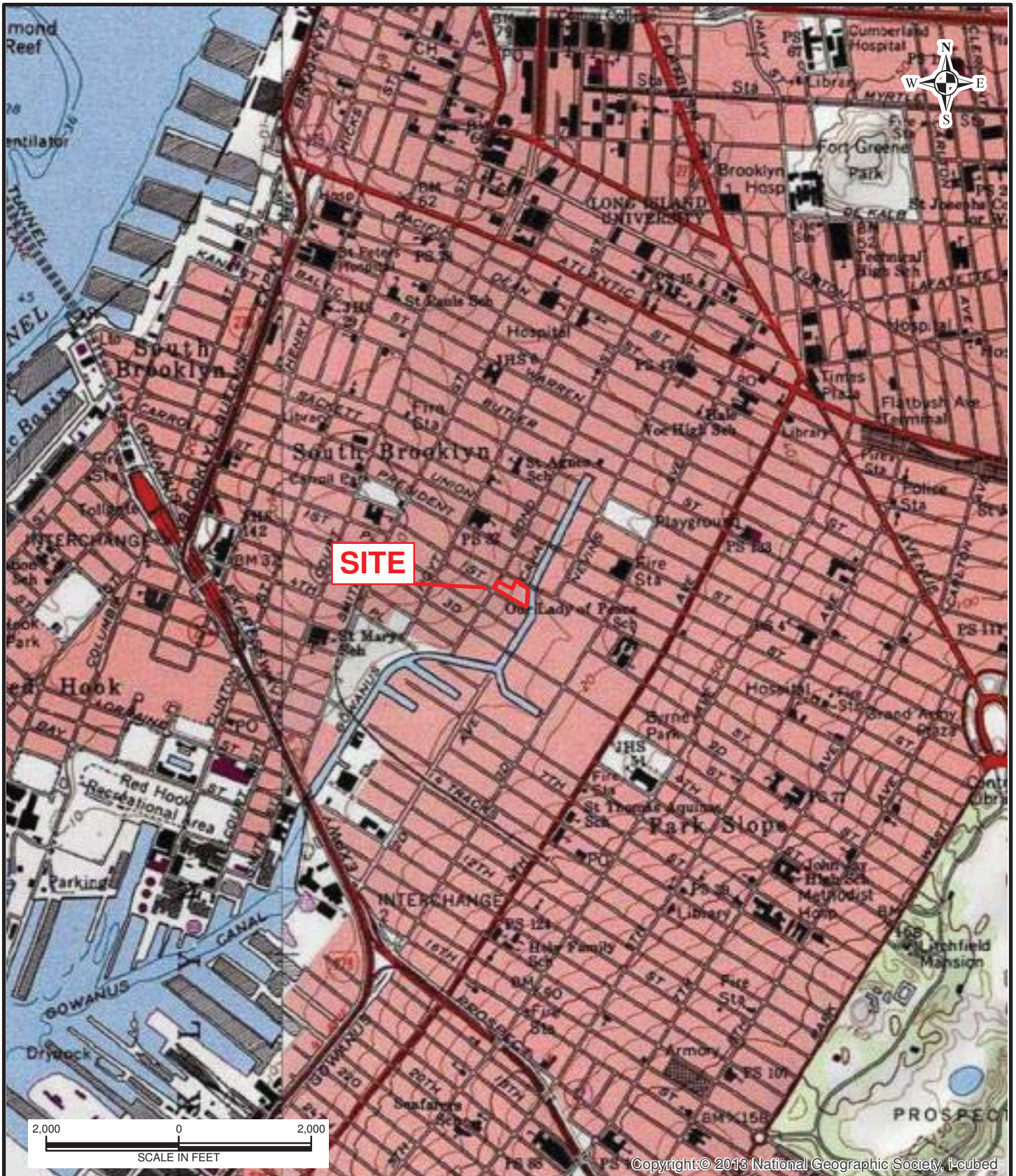
Institutional Controls: The Environmental Easement discussed in Paragraph 6 above.

Engineering Controls: The site cover discussed in Paragraph 3, the sub-slab depressurization or similar engineered systems discussed in Paragraph 4 and the contingent groundwater remedy discussed in Paragraph 5 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 groundwater use restrictions;
- 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 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; and
 - a schedule of monitoring and frequency of submittals to the Department.
- 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
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 Langan Engineering, Environmental, Surveying and
 Landscape Architecture, D.P.C.
 Langan International LLC
 Collectively known as Langan

NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project

**PROPOSED BOND STREET
 DEVELOPMENT**

BLOCK No. 452, LOT Nos. 1 & 15

BROOKLYN

KINGS COUNTY

NEW YORK

Drawing Title

**SITE LOCATION
 MAP**

Project No.

100287503

Date

10/19/2012

Scale

1"=2000'

Drawn By

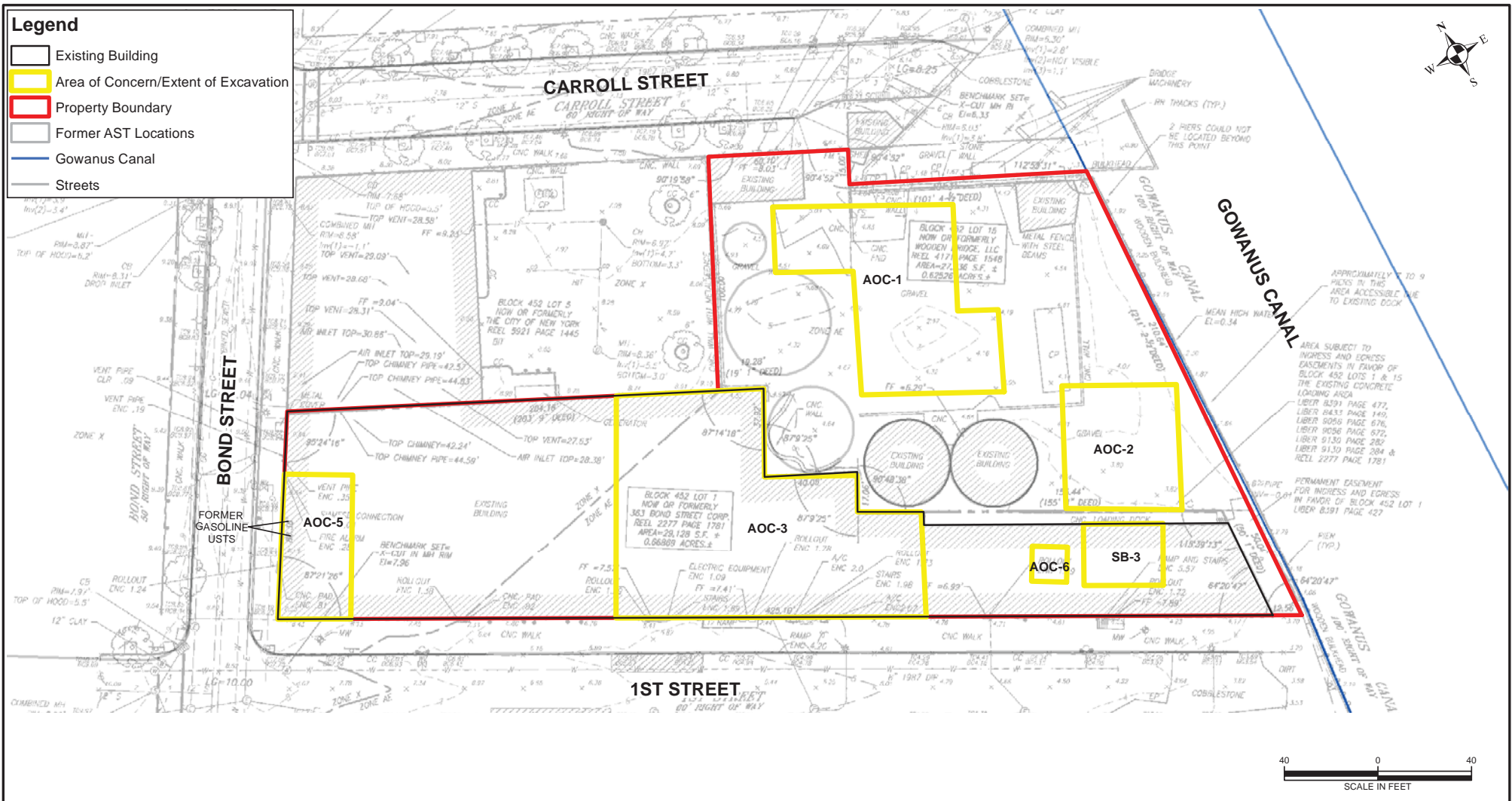
amf

Last Revised

5/9/2014

Figure

1



- Notes:
- Map features are based on aerial photographs, tax maps, and the following ELM reports: Phase II Investigation Report, 363 Bond Street (May 2005); and Phase II Investigation Report, 400 Carroll Street (May 2005).
 - AOC-1: Proposed Excavation Area - 388 Carroll Street, North; AOC-2: Proposed Excavation Area - 388 Carroll Street, South; AOC-3: Proposed Excavation Area - 363 Bond Street; AOC-5: Former UST Area; AOC-6: LSV-20.
 - Site survey from "Topographic & Boundary Survey," by Langan, dated 18 January 2013.

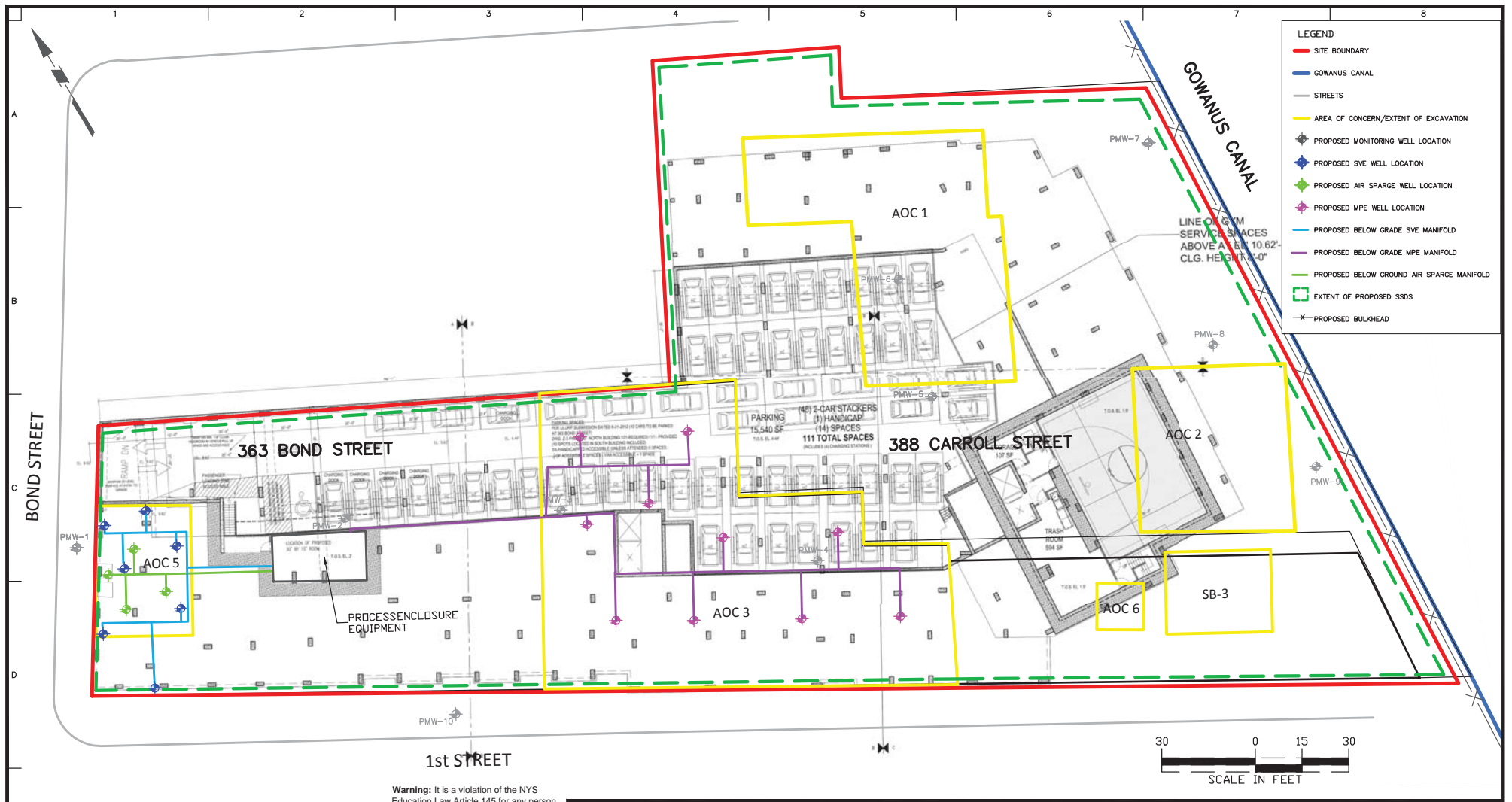
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 NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project
PROPOSED BOND STREET DEVELOPMENT
 BLOCK No. 452, LOT Nos. 1 & 15
 BROOKLYN
 KINGS COUNTY NEW YORK

Drawing Title
SITE PLAN

Project No. 100287501	2A
Date 5/6/2014	
Scale 1"=40'	
Drawn By atr	
Last Revised 11/24/2014	



- Notes:**
1. SVE: Soil Vapor Extraction
 2. MPE: Multi-Phase Extraction
 3. SSDS: Sub-Slab Depressurization System
 4. Map features are based on aerial photographs, tax maps, and the following ELM report: Phase II Investigation Report, 363 Bond Street (May 2005).
 5. The proposed contingent air sparge/SVE and MPE groundwater remedial actions are being proposed as part of the Track 4 Remedial Alternative for 363 Bond Street to address and remediate any potential remaining groundwater impacts.
 6. The location of the proposed air sparge/SVE, MPE, and monitoring wells and associated groundwater remediation infrastructure (i.e. manifolding) is subject to change based upon post Interim Remedial Measure sampling results and actual site conditions.

Warning: It is a violation of the NYS Education Law Article 145 for any person, unless he is acting under the direction of a licensed Professional Engineer, to alter this item in any way.

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 Langan Engineering, Environmental, Surveying and
 Landscape Architecture, D.P.C.
 Langan Engineering and Environmental Services, Inc.
 Langan CT, Inc.
 Langan International LLC
 Collectively known as Langan
 NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project
PROPOSED BOND STREET DEVELOPMENT
 BLOCK No. 452, LOT No. 1
 BROOKLYN
 KINGS COUNTY NEW YORK

Drawing Title
AOC-3 AND AOC-5 PROPOSED CONTINGENT GROUNDWATER REMEDIAL ACTION INFRASTRUCTURE

Project No. 100287501	Drawing No. 2B
Date 5/14/2014	
Scale AS SHOWN	
Drawn By KN	Checked By NN
Last Revised 11/24/2014	