DECISION DOCUMENT

60-66 Gerry Street
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224396
March 2025

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

DECLARATION STATEMENT - DECISION DOCUMENT

60-66 Gerry Street
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224396
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Statement of Purpose and Basis

This document presents the remedy for the 60-66 Gerry Street 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 (NYSDEC) for the 60-66 Gerry Street site and the public's input to the proposed remedy presented by NYSDEC.

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;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and

- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

As part of the remedial design program, to evaluate the remedy with respect to green and sustainable remediation principles, an environmental footprint analysis will be completed. The environmental footprint analysis will be completed using an accepted environmental footprint analysis calculator such as SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA), SiteWise^{TM} (available in the Sustainable Remediation Forum [SURF] library) or similar NYSDEC accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial design program, as appropriate. The project design specifications will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial design program.

Additionally, the remedial design program will include a climate change vulnerability assessment, to evaluate the impact of climate change on the project site and the proposed remedy. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress and drought), flooding, and sea level rise will be identified, and the remedial design program will incorporate measures to minimize the impact of climate change on potential identified vulnerabilities.

2. Groundwater Remedy: Enhanced Bioremediation

In-situ enhanced biodegradation will be employed to treat chlorinated volatile organic compounds (CVOCs) in groundwater in the northwestern portion of the site. The biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by the placement of Hydrogen-Release Compound (HRC®), a colloidal sulfidated zero-valent iron (S-MicroZVI®), and Bio-Dechlor Innoculum® Plus into the subsurface via injection wells screened from the top of the water table, which currently sits at approximately 8 – 10 feet (ft), to 32 ft. In addition, soil mixing will be implemented in the upper two feet of the water table after excavation.

A Remedial Design will be completed prior to the full implementation of this technology to confirm the actual on-site conditions and more clearly define design parameters.

Monitoring will be required within and down-gradient from the treatment zone. Monitoring will be conducted for chlorinated VOCs as well as for indicator parameters supporting biodegradation.

3. Excavation

Excavation and off-site disposal of contaminant source areas, including:

- soils which exceed the protection of groundwater soil cleanup objectives (PGWSCOs), as defined by 6 NYCRR Part 375-6.8, for those contaminants found in site groundwater above standards; and
- any unknown underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination.

All soils in the upper two feet which exceed the Restricted Residential SCOs (RRSCOs) will be excavated and transported off-site for disposal.

Additionally, excavation of chlorinated solvent source areas will extend to the encountered water table. To facilitate excavation for the proposed development, the site will undergo dewatering that will lower the water table to 13 ft below grade (ft-bg) across the site, and up to 15 and 18 ft-bg in select areas, thus exposing more unsaturated soil that could potentially be impacted with chlorinated solvents. Therefore, excavation for remedial purposes may extend as deep as 18 ft-bg.

Approximately 3,475 cubic yards of contaminated soil will be removed from the site. Collection and analysis of end-point samples at the remedial excavation depth will be used to verify whether SCOs for the site have been achieved. If confirmation sampling indicates that SCOs were not achieved at the stated remedial depth, the Applicant must notify NYSDEC, submit the sample results and, and in consultation with NYSDEC, determine if further remedial excavation is necessary. Further excavation for development will proceed after confirmation samples demonstrate that SCOs for the site have been achieved.

To ensure proper handling and disposal of excavated material, waste characterization sampling will be completed for all identified contaminated site material. Waste characterization sampling will be performed exclusively for the purposes of off-site disposal in a manner suitable to receiving facilities and in conformance with applicable federal, state, and local laws, rules, and regulations and facility-specific permits.

4. Excavation Dewatering & Treatment

The proposed maximum depth of the development excavation is 18 ft-bg, which is below the static water table (approximately 8 – 10 ft-bg); therefore, dewatering to facilitate the remedial excavation will be implemented. Extracted groundwater will be treated and discharged to the local sewer system in compliance with all municipal requirements, including permits from NYCDEP and/or pre-treatment if warranted.

5. Backfill

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

6. Cover System

A site cover will be required in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs), to allow for future restricted residential use of the site. Where a soil cover is to be used it will be a minimum two feet of soil placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetative layer. Soil cover material, including any fill material brought to the site, will meet the SCOs for cover material for the use of the site as set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and components may be allowed where such components already exist or are a component of the tangible property to be placed as part of site redevelopment. Such components may include, but are not necessarily limited to: pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs.

7. Vapor Mitigation

Any on-site buildings will be required to have a sub-slab depressurization system, or other acceptable measures, to mitigate the migration of vapors into the building from the subsurface.

8. Institutional Controls

Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

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

9. 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 Remedy Element 8 above.

– Engineering Controls: The Cover System discussed in Remedy Element 6, the monitoring well network discussed in Remedy Element 2, and the Vapor Mitigation measures described in Remedy Element 7 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;
- a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Remedy Element 6 above will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs);
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and NYSDEC 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 and indoor air to assess the performance and effectiveness of the remedy;
   - a schedule of monitoring and frequency of submittals to the NYSDEC; and
   - monitoring for vapor intrusion for any buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

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.

March 10, 2025

Date

Jane H. O'Connell
Regional Remediation Engineer, Region 2

DECISION DOCUMENT

60-66 Gerry Street
Brooklyn, Kings County
Site No. C224396
March 2025

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (NYSDEC), 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, where a contaminant is present at levels exceeding the soil cleanup objectives or other health-based or environmental standards, criteria or guidance, based on the reasonably anticipated use of the property.

NYSDEC 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

NYSDEC 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 NYSDEC 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:

DECInfo Locator - Web Application
https://gisservices.dec.ny.gov/gis/dil/index.html?rs=C224396

New York Public Library Williamsburg Branch
240 Division Ave at Marcy Ave
Brooklyn, NY 11211
Phone: (718) 302-3485

Brooklyn Community Board 1
435 Graham Avenue
Brooklyn, NY 11211
Phone: (718) 389-0009

Receive Site Citizen Participation Information By Email

Please note that NYSDEC'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 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 at 60 – 66 Gerry Street in the Williamsburg neighborhood of Brooklyn, NY. It is designated as Block 2269, Lots 3 and 5 on the NYC tax map and is a square-shaped parcel with an area of approximately 0.23-acres (10,000 sq-ft). The site exists within the boundaries of the Pfizer Sites B and D Voluntary Cleanup Program (VCP) site (#V00350). The site is bordered to the north by Gerry Street followed by a high school and an active construction site that are both also part of the former Pfizer VCP site; to the east by a vacant lot that is also an active BCP site (#C224366) followed by several residential/commercial buildings and Throop Avenue; to the south by a 3-story office building as well as another vacant lot that is part of an active BCP site (#C224333) followed by Bartlett Street; and to the west by a 7-story mixed-used residential building followed by Harrison Avenue.

Site Features:
The site is currently vacant and is paved with asphalt as well as a surficial layer of recycled concrete aggregate (RCA). The site is enclosed by a construction fence with a locked gate along Gerry Street.

Current Zoning and Land Use:
The site is zoned R7A for Residential Use. The surrounding parcels are currently used for a combination of educational, commercial, and residential uses.

Past Use of the Site:
Pfizer occupied buildings on Block 2269 (known as "Pfizer Site D") as early as 1947 but did not own the building at 60 - 66 Gerry Street until 1965. Prior to Pfizer's ownership, the site was used as a dry cleaner in the 1930s and as a tetrachloroethylene (PCE) reclamation facility during the 1950s. Pfizer used Site D for storage purposes and general maintenance and housed its engineering and maintenance departments in this building. The facility was leased to Arlington Press from 1987 to the end of 2007. In 2011 Pfizer entered into a VCP agreement with NYSDEC

to investigate and remediate Site D. The site was partially remediated in 2015 and 2016 by removing approximately 140 cubic yards of chlorinated solvent impacted soil from Lot 5 and backfilling with clean material. This was followed by a two-phase injection program consisting of ISCO injections and a liquid activated carbon/biodegradation injection. The on-site buildings were demolished by 2017, and the site has been vacant since.

Site Geology and Hydrogeology:
The top layer of the site consists of urban fill at up to 17.5 feet below grade (ft-bg) in some areas. This fill mainly consists of brick, concrete, asphalt, gravel, coal ash, brown, black, gray fine-to-medium grained sand, silt, and clay. Following excavation activities at the site in 2015 portions of Lot 5 were backfilled with RCA to a depth of up to 8 ft-bg. This urban fill and RCA are underlain by native green clay/silt/sand, brown fine to medium sand with minor amounts of silt and gravel, and gray silt/clay. A minimum 10 ft thick, low permeability gray silt/clay stratum was typically encountered between 25 and 30 ft-bg. Bedrock is estimated at 160 to 200 ft-bg. On-site groundwater is encountered at depths ranging from 8 to 10 ft-bg and generally flows east, though regional groundwater is reported to flow more towards the northeast.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

NYSDEC 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 that restrict 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 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 under the Brownfield Cleanup Agreement is a Volunteer. The Applicant does not have an obligation to address off-site contamination. However, NYSDEC has determined that this site poses a significant threat to public health or the environment; accordingly, enforcement actions are necessary.

NYSDEC will seek to identify any parties (other than the Volunteer) known or suspected to be responsible for contamination at or emanating from the site, referred to as Potentially Responsible Parties (PRPs). NYSDEC will bring an enforcement action against the PRPs. If an enforcement action cannot be brought, or does not result in the initiation of a remedial program by any PRPs, NYSDEC will evaluate the off-site contamination for action under the State Superfund. The PRPs are subject to legal actions by the State for recovery of all response costs the State incurs or has incurred.

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. NYSDEC 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:

tetrachloroethene (PCE)
trichloroethene (TCE)
vinyl chloride
cis-1,2-dichloroethene
benzo(a)anthracene
benzo(a)pyrene
benzo(b)fluoranthene
benzo(k)fluoranthene
chrysene
indeno(1,2,3-cd)pyrene
lead

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.

There were no IRMs performed at this site during the RI.

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 volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), per- and polyfluoroalkyl substances (PFAS), and pesticides. Soil vapor samples were analyzed for VOCs. Based upon investigations conducted to date, the primary contaminants of concern for the site include VOCs, SVOCs, and metals in soil and groundwater, and VOCs in soil vapor.

Soil
Chlorinated VOCs were detected above both the restricted residential Soil Cleanup Objectives (RRSCOs) and/or the protection of groundwater SCOs (PGWSCOs) in both shallow and deep soils across the site, including maximum concentrations of tetrachloroethene (PCE) at 30 parts per million (ppm) (PGWSCO is 1.3 ppm, RRSCO is 19 ppm); trichloroethene (TCE) at 2.2 ppm (PGWSCO is 0.47 ppm); cis-1,2-dichloroethene (cis-1,2-DCE) at 30 ppm (PGWSCO is 0.25 ppm); trans-1,2-dichloroethene (trans-1,2-DCE) at 0.22 ppm (PGWSCO is 0.19 ppm); and vinyl chloride at 9.4 ppm (PGWSCO is 0.02 ppm, RRSCO is 0.9 ppm).

Several SVOCs were detected above the RRSCOs, including maximum concentrations of benzo(a)anthracene at 36 ppm (RRSCO is 1 ppm); benzo(a)pyrene at 31 ppm (RRSCO is 1 ppm); benzo(b)fluoranthene at 36 ppm (RRSCO is 1 ppm); benzo(k)fluoranthene at 11 ppm

(RRSCO is 3.9 ppm); chrysene at 37 ppm (RRSCO is 3.9 ppm); indeno(1,2,3-cd)pyrene at 16 ppm (RRSCO is 0.5 ppm); dibenz(a,h)anthracene at 4.2 ppm (RRSCO is 0.33 ppm); and phenanthrene at 120 ppm (RRSCO is 100 ppm).

Several metals were detected above the RRSCOs, including maximum concentrations of arsenic at 35.7 ppm (RRSCO 16 ppm); barium at 1,080 ppm (RRSCO is 400 ppm); lead at 6,330 ppm (RRSCO is 400 ppm); mercury at 6.83 ppm (RRSCO is 0.81 ppm), copper at 1,490 ppm (RRSCO is 270 ppm); and cadmium at 5.46 ppm (RRSCO is 4.3 ppm).

Four pesticides and one PCB were detected above their respective Unrestricted Use SCOs, but well below the RRSCOs.

No PFAS compounds were detected above the SCOs.

Data does not indicate that there are any off-site impacts in soil related to this site.

Groundwater

VOCs were detected in groundwater above the Ambient Water Quality Standards and Guidance Values (AWQSGVs), including maximum concentrations of PCE at 36 parts per billion (ppb), TCE at 8.9 ppb, cis-1,2-DCE at 28 ppb, and 1,1-dichloroethane (1,1-DCA) at 7.4 ppb. The AWQSGV for each of these contaminants is 5 ppb. Vinyl chloride was also detected in groundwater at a maximum concentration of 190 ppb (AWQSGV is 2 ppb), and 1,4-dioxane was detected at 40 ppb (AWQSGV is 0.35 ppb).

Several SVOCs were detected above the AWQSGVs, including maximum concentrations of benzo(b)fluoranthene at 0.45 ppb, benzo(k)fluoranthene at 0.34 ppb, chrysene at 0.42 ppb, and indeno(1,2,3-cd)pyrene at 0.46 ppb. The AWQSGV for each of these contaminants is 0.002 ppb. Benzo(a)pyrene was also detected at a max. of 0.5 ppb (AWQSGV is non-detect), and phenol was detected at a max. of 1.5 ppb (AWQSGV is 1 ppb).

Dissolved metals detected above the AWQSGVs include sodium, iron, manganese and magnesium. These are naturally occurring minerals and are not considered to be site-specific contaminants.

Perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) were found at maximum concentrations of 5.61 parts per trillion (ppt) (AWQSGV is 2.7 ppt) and 45.6 ppt (AWQSGV is 6.7 ppt), respectively.

There were no detections of pesticides or PCBs in groundwater.

Data indicates off-site impacts in groundwater related to this site.

Soil Vapor

Chlorinated VOCs detected in soil vapor samples include maximum concentrations of PCE at 8,340 micrograms per cubic meter ($\mu g/m^3$); TCE at 580 ug/m3; cis-1,2-DCE at 1,600 $\mu g/m^3$;

vinyl chloride at 51 µg/m^3; 1,1,1-trichloroethane (1,1,1-TCA) at 146 µg/m^3; carbon tetrachloride at 2.44 µg/m^3; 1,1-dichloroethylene (1,1-DCE) at 11 µg/m^3; and methylene chloride at 10 µg/m^3.

Petroleum-related VOCs were also detected, including maximum concentrations of 1,2,4-trimethylbenzene at 16.1 µg/m^3; 1,3,5-trimethylbenzene at 4.12 µg/m^3; benzene at 14.3 µg/m^3; cyclohexane at 21 µg/m^3; ethylbenzene at 19.3 µg/m^3; heptane at 9.9 µg/m^3; hexane at 19 µg/m^3, toluene at 51.6 µg/m^3; m,p-xylene at 67.3 µg/m^3; and o-xylene at 21.1 µg/m^3.

Data indicates off-site impacts in soil vapor related to this site.

6.4: Summary of Human Exposure Pathways

People may come into contact with contaminated soil or groundwater if they dig below the surface. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. Volatile organic compounds in soil vapor (air spaces within the soil) may move into 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 structures, is referred to as soil vapor intrusion. The site is vacant so inhalation of site contaminants in indoor air via soil vapor intrusion is not a current concern. There is a potential for people to inhale site contaminants in indoor air due to soil vapor intrusion in future on-site buildings and off-site buildings.

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

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- 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 Residential use remedy.

The selected remedy is referred to as the Soil Excavation, Groundwater Treatment, Cover System, Soil Vapor Mitigation, and Site Management remedy.

The elements of the selected remedy, as shown in Figures 2 – 8, 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;
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- 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;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

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Additionally, the remedial design program will include a climate change vulnerability assessment, to evaluate the impact of climate change on the project site and the proposed remedy. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress and drought), flooding, and sea level rise will be identified, and the remedial design program will incorporate measures to minimize the impact of climate change on potential identified vulnerabilities.

2. Groundwater Remedy: Enhanced Bioremediation

In-situ enhanced biodegradation will be employed to treat chlorinated volatile organic compounds (CVOCs) in groundwater in the northwestern portion of the site. The biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by the placement of Hydrogen-Release Compound (HRC®), a colloidal sulfidated zero-valent iron (S-MicroZVI®), and Bio-Dechlor Innoculum® Plus into the subsurface via injection wells screened from the top of the water table, which currently sits at approximately 8 – 10 feet (ft), to 32 ft. In addition, soil mixing will be implemented in the upper two feet of the water table after excavation.

A Remedial Design will be completed prior to the full implementation of this technology to confirm the actual on-site conditions and more clearly define design parameters.

Monitoring will be required within and down-gradient from the treatment zone. Monitoring will be conducted for chlorinated VOCs as well as for indicator parameters supporting biodegradation.

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Excavation and off-site disposal of contaminant source areas, including:

- soils which exceed the protection of groundwater soil cleanup objectives (PGWSCOs), as defined by 6 NYCRR Part 375-6.8, for those contaminants found in site groundwater above standards; and
- any unknown underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination.

All soils in the upper two feet which exceed the Restricted Residential SCOs (RRSCOs) will be excavated and transported off-site for disposal.

Additionally, excavation of chlorinated solvent source areas will extend to the encountered water table. To facilitate excavation for the proposed development, the site will undergo dewatering that will lower the water table to 13 ft below grade (ft-bg) across the site, and up to 15 and 18 ft-bg in select areas, thus exposing more unsaturated soil that could potentially be impacted with chlorinated solvents. Therefore, excavation for remedial purposes may extend as deep as 18 ft-bg.

Approximately 3,475 cubic yards of contaminated soil will be removed from the site. Collection and analysis of end-point samples at the remedial excavation depth will be used to verify whether SCOs for the site have been achieved. If confirmation sampling indicates that SCOs were not achieved at the stated remedial depth, the Applicant must notify NYSDEC, submit the sample results and, and in consultation with NYSDEC, determine if further remedial excavation is necessary. Further excavation for development will proceed after confirmation samples demonstrate that SCOs for the site have been achieved.

To ensure proper handling and disposal of excavated material, waste characterization sampling will be completed for all identified contaminated site material. Waste characterization sampling will be performed exclusively for the purposes of off-site disposal in a manner suitable to receiving facilities and in conformance with applicable federal, state, and local laws, rules, and regulations and facility-specific permits.

4. Excavation Dewatering & Treatment

The proposed maximum depth of the development excavation is 18 ft-bg, which is below the static water table (approximately 8 – 10 ft-bg); therefore, dewatering to facilitate the remedial excavation will be implemented. Extracted groundwater will be treated and discharged to the local sewer system in compliance with all municipal requirements, including permits from NYCDEP and/or pre-treatment if warranted.

5. Backfill

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

6. Cover System

A site cover will be required in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs), to allow for future restricted residential use of the site. Where a soil cover is to be used it will be a minimum two feet of soil placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetative layer. Soil cover material, including any fill material brought to the site, will meet the SCOs for cover material for the use of the site as set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and components may be allowed where such components already exist or are a component of the tangible property to be placed as part of site redevelopment. Such components may include, but are not necessarily limited to: pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs.

7. Vapor Mitigation

Any on-site buildings will be required to have a sub-slab depressurization system, or other acceptable measures, to mitigate the migration of vapors into the building from the subsurface.

8. Institutional Controls

Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

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

9. 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 Remedy Element 8 above.

– Engineering Controls: The Cover System discussed in Remedy Element 6, the monitoring well network discussed in Remedy Element 2, and the Vapor Mitigation measures described in Remedy Element 7 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;
- a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Remedy Element 6 above will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs);
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and NYSDEC 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 and indoor air to assess the performance and effectiveness of the remedy;
    - a schedule of monitoring and frequency of submittals to the NYSDEC; and
    - monitoring for vapor intrusion for any buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

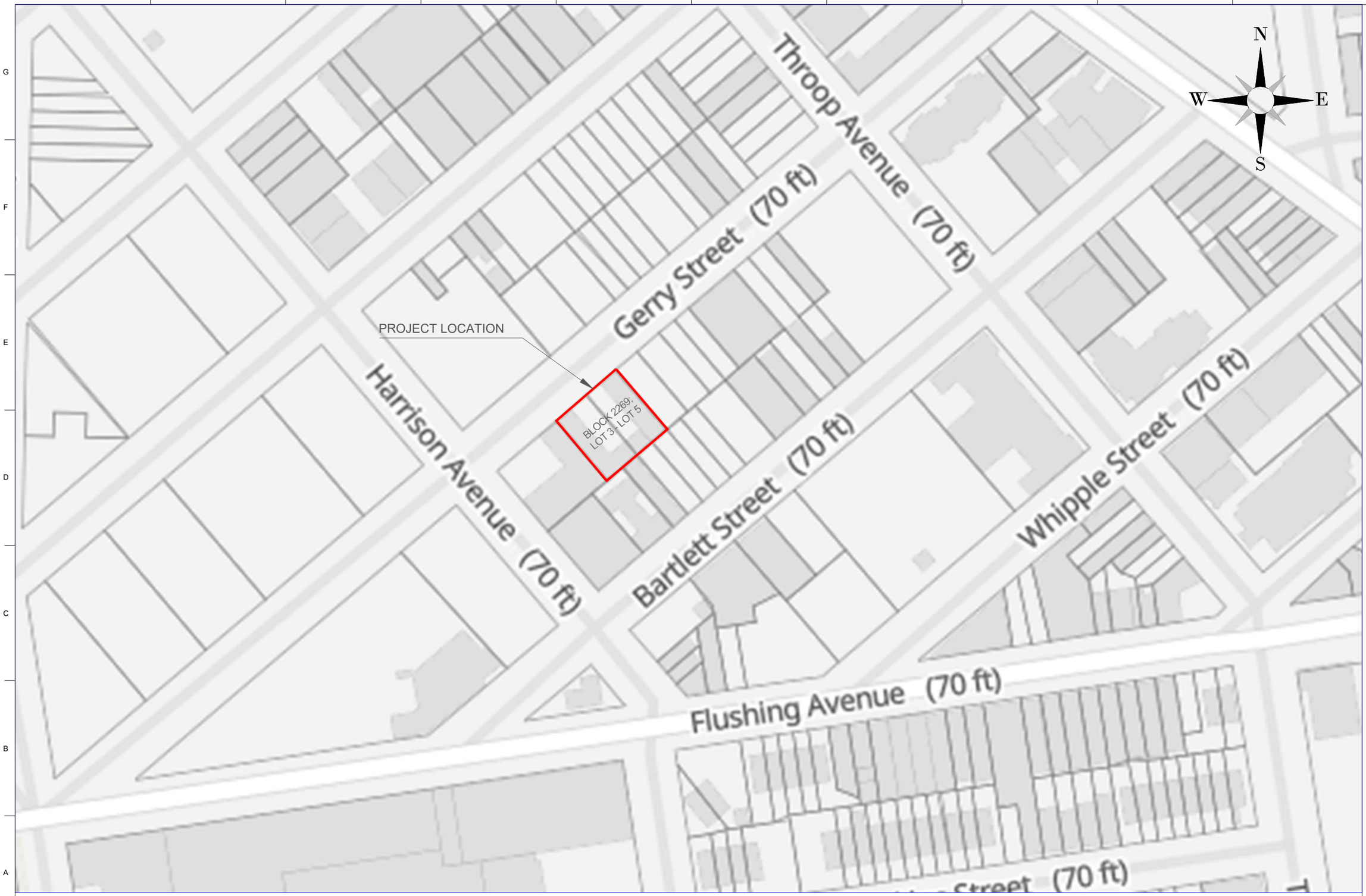

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FIGURE 1
SITE LOCATION MAP

BCP Site No. C224396
60-66 Gerry Street
BROOKLYN, NEW YORK
BLOCK 2269, Lots 3 and 5

SHEET ID
1

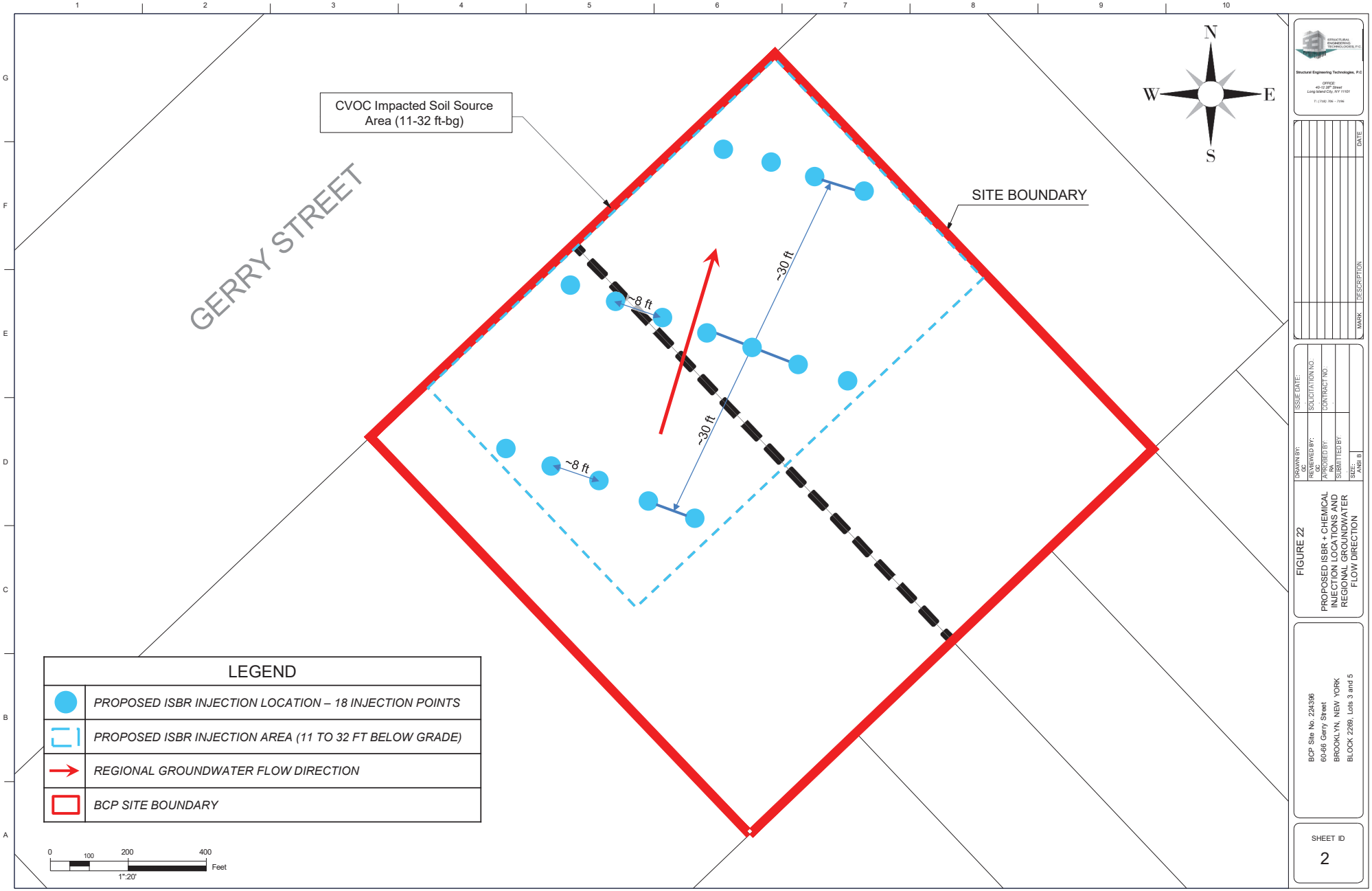

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FIGURE 22
PROPOSED ISBR + CHEMICAL INJECTION LOCATIONS AND REGIONAL GROUNDWATER FLOW DIRECTION

BCP Site No. 224396
60-66 Gerry Street
BROOKLYN, NEW YORK
BLOCK 2269, Lots 3 and 5

SHEET ID
2

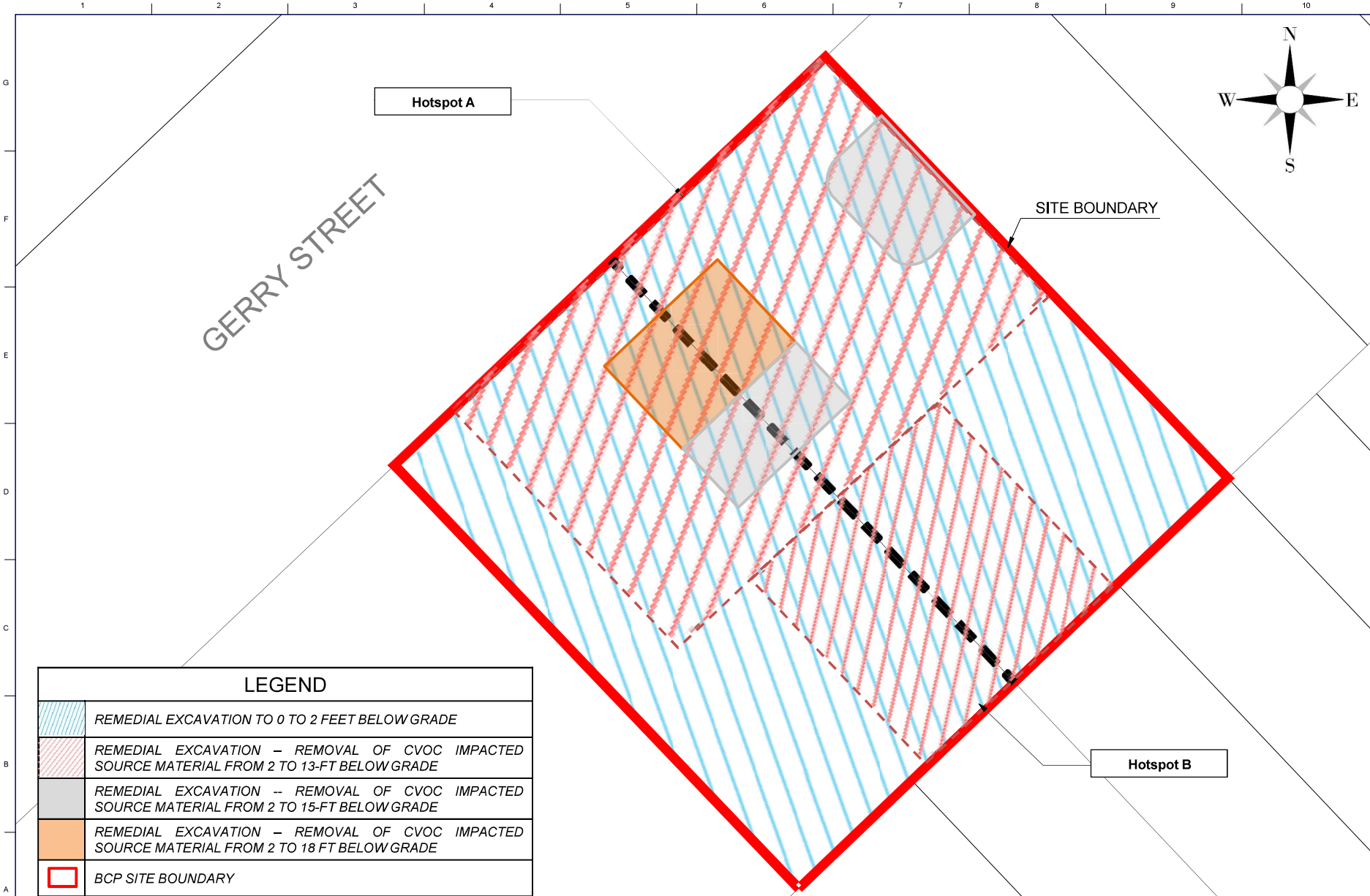

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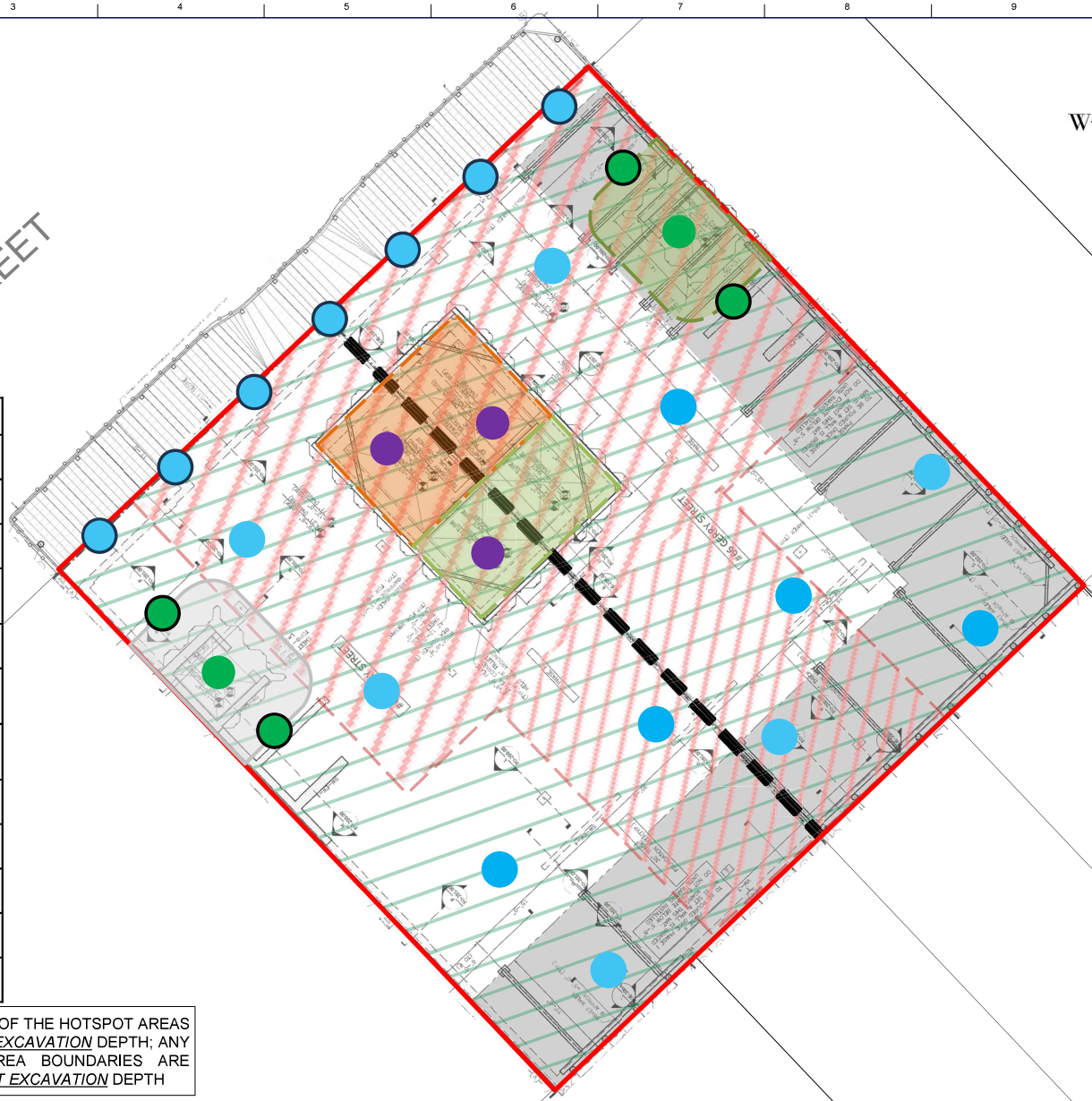
FIGURE 15A
REMEDIAL EXCAVATION PLAN

BCP Site No. 224386
60-66 Gerry Street
BROOKLYN, NEW YORK
BLOCK 2289; Lots 3 and 5

SHEET ID
3



LEGEND	
	BCP SITE BOUNDARY
	PHASE II POURING (ONCE WALL IS BRACED AGAINST PHASE I MAT)
	DEVELOPEMENT EXCAVATION TO 13 FT BELOW GRADE
	REMEDIAL EXCAVATION (HOTSPOTS A AND B) – REMOVAL OF CVOC IMPACTED SOURCE MATERIAL FROM 0 TO AT LEAST 13-FT BELOW GRADE
	DEVELOPMENT EXCAVATION TO 15 FT BELOW GRADE
	REMEDIAL EXCAVATION – REMOVAL OF CVOC IMPACTED SOURCE MATERIAL FROM 0 TO AT LEAST 15-FT BELOW GRADE
	REMEDIAL EXCVATION – REMOVAL OF CVOC IMPACTED SOURCE MATERIAL FROM 0 TO AT LEAST 18 FT BELOW GRADE
	13-FT EXCAVATION BASE SAMPLE LOCATION
	LOCATION OF SIDEWALL SAMPLE TO BE COLLECTED FROM 13-FT BELOW GRADE
	15-FT EXCAVATION BASE SAMPLE LOCATION
	LOCATION OF SIDEWALL SAMPLE TO BE COLLECTED FROM 15 FT BELOW GRADE
	18-FT EXCAVATION BASE SAMPLE LOCATION

NOTE: SAMPLES TAKEN WITHIN THE BOUNDARIES OF THE HOTSPOT AREAS ARE CONFIRMATION SAMPLES AT THE *REMEDIAL EXCAVATION* DEPTH; ANY SAMPLES TAKEN OUTSIDE THE HOTSPOT AREA BOUNDARIES ARE DOCUMENTATION SAMPLES AT THE *DEVELOPMENT EXCAVATION* DEPTH

0 100 200 400 Feet
1":20'

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FIGURE 16
SITE-WIDE EXCAVATION DOCUMENTATION AND CONFIRMATION SAMPLING PLAN

BCP Site No. 224386
60-66 Gerry Street
BROOKLYN, NEW YORK
BLOCK 2289; Lots 3 and 5

SHEET ID
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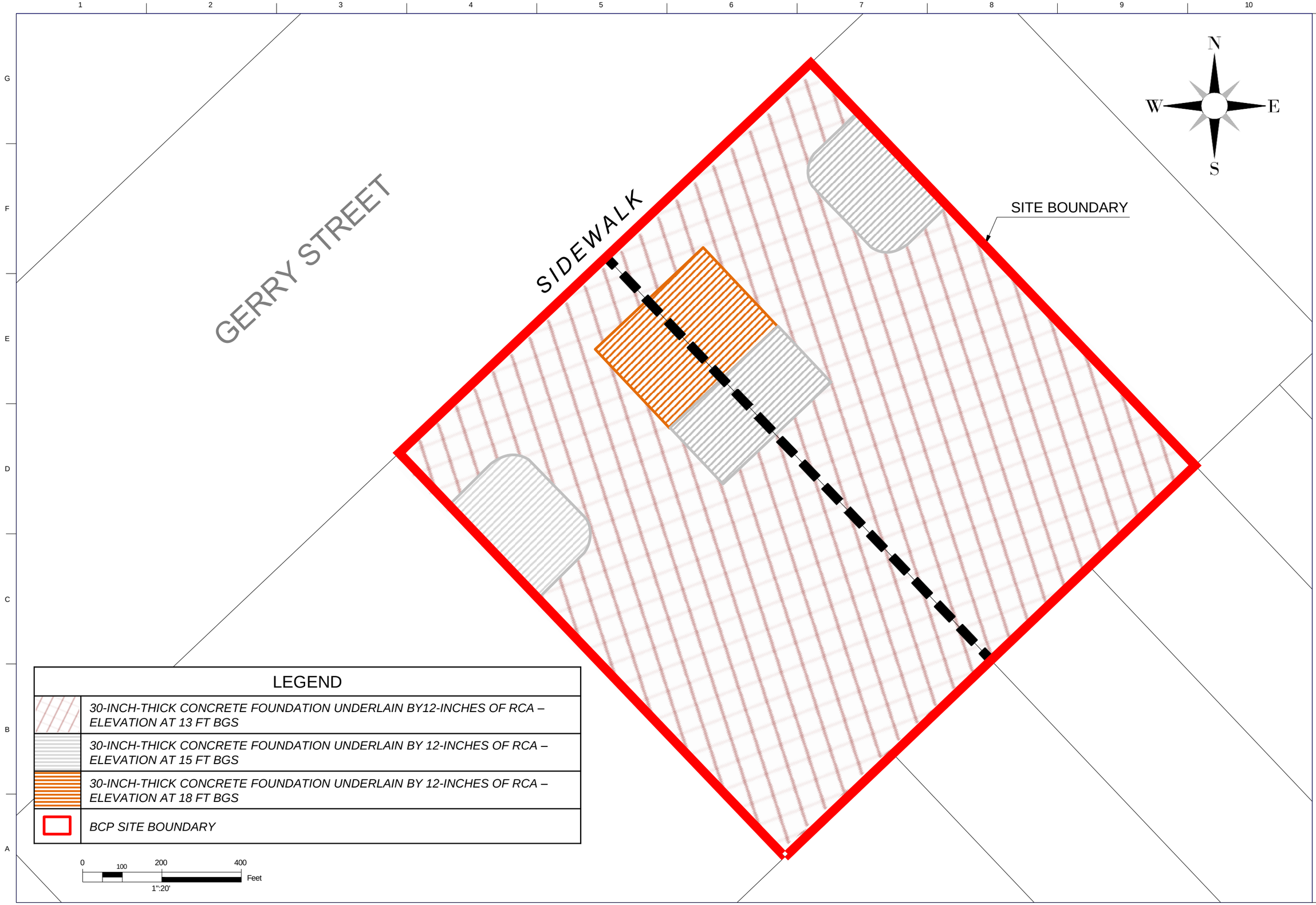

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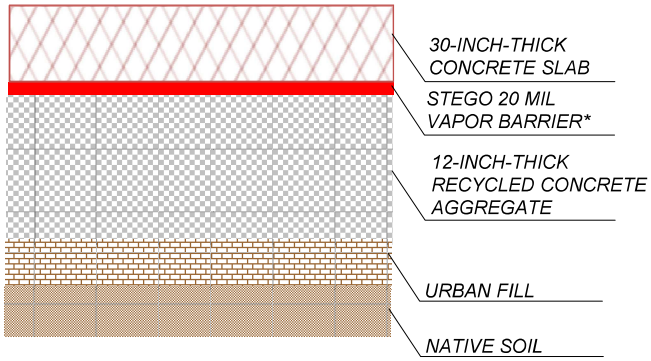
FIGURE 19
PROPOSED SITE-WIDE COVER DIAGRAM

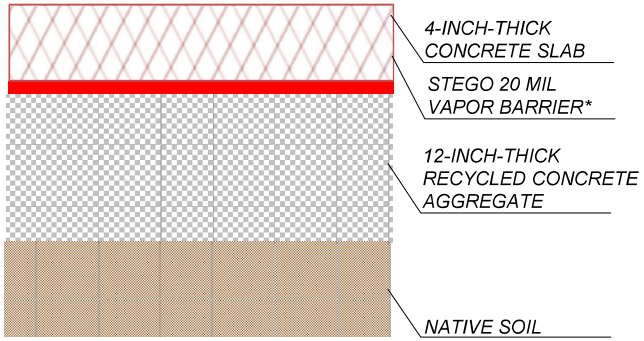
BCP Site No. C224396
60-66 Gerry Street
BROOKLYN, NEW YORK
BLOCK 2269, Lots 3 and 5

SHEET ID
5

Composite Cover System –
Building Area with Backfill *(NTS)*



Composite Cover System –
Building Area Beneath Ritual Baths with Backfill *(NTS)*



** NOTE: THE VAPOR BARRIER IS INCLUDED AS A PART OF THE BUILDING FOUNDATION AS A GREEN REMEDIATION PREVENTATIVE MEASURE TO PREVENT SOIL VAPOR INTRUSION*

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FIGURE 20
PROPOSED COVER SYSTEM
CROSS SECTION

BCP Site No. C224396
60-66 Gerry Street
BROOKLYN, NEW YORK
BLOCK 2289, Lots 3 and 5

SHEET ID
6

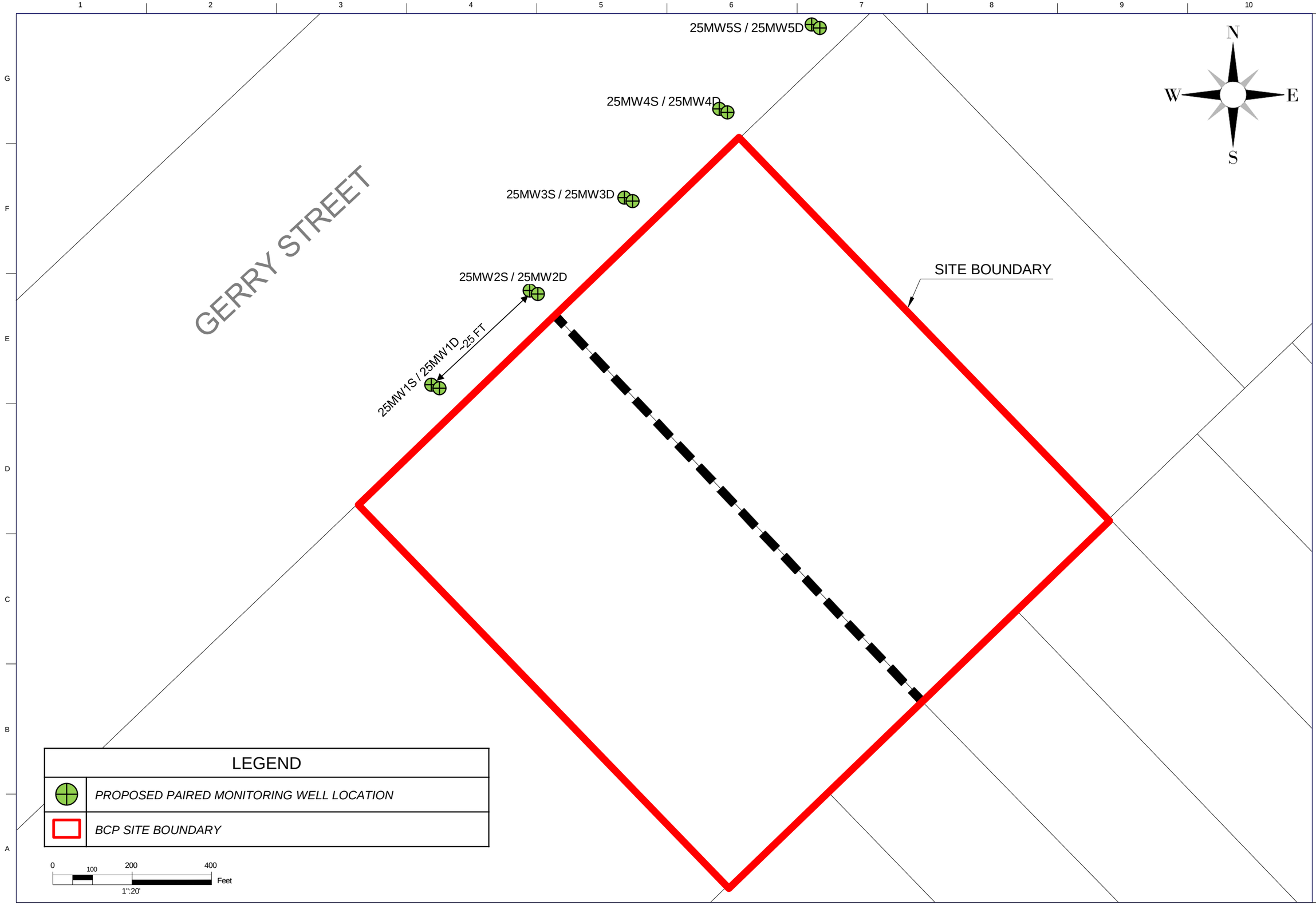

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FIGURE 23
PROPOSED MONITORING WELL LOCATIONS

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BLOCK 2269, Lots 3 and 5

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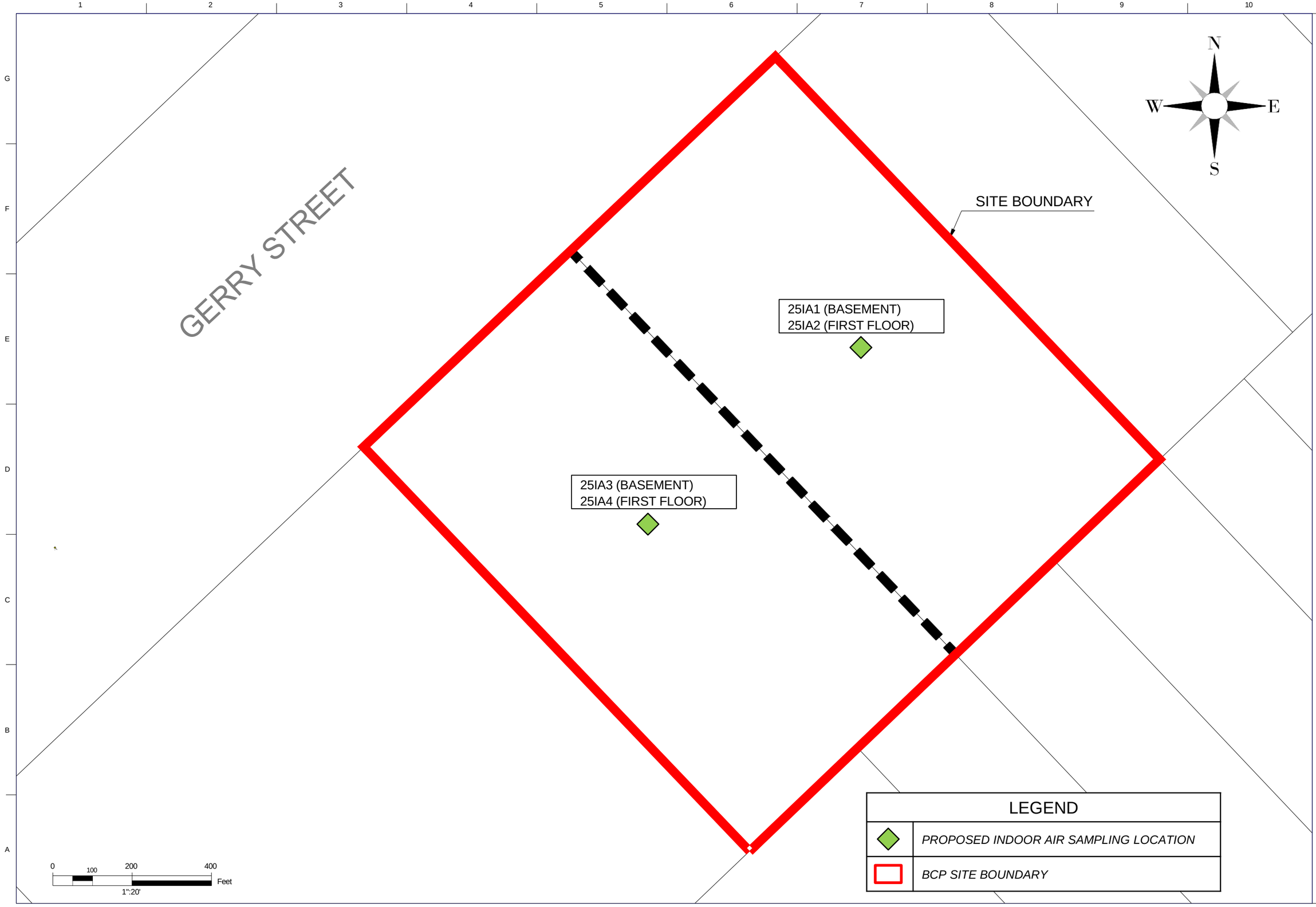

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FIGURE 24
PROPOSED INDOOR AIR SAMPLE LOCATIONS

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BLOCK 2269, Lots 3 and 5

SHEET ID
8